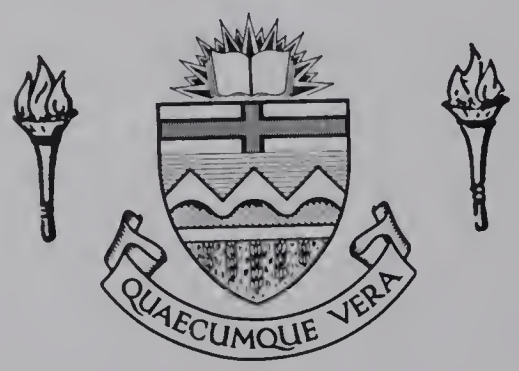
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AN HISTORICAL ANALYSIS OF COMPETITIVE RUBBER BALL GAMES IN MESOAMERICA, ARIZONA AND THE GREATER ANTILLES

by

ALLAN ELTON COX

A THESIS

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UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "An Historical Analysis of Competitive Rubber Ball Games in Mesoamerica, Arizona and the Greater Antilles," submitted by Allan Elton Cox in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

The purpose of this study was to examine evidence relating to the role and development of competitive rubber ball games in Mesoamerica, Arizona and the Greater Antilles.

The following sub-problems were pertinent to the problem under investigation:

1. An investigation of the origin and distribution of ballcourts in the three culture areas, and an examination of the differences in structural type of these courts.

2. A comparison of early written accounts of rubber ball games in Mesoamerica and the Greater Antilles with archeological evidence from the same and earlier periods, in order to postulate possible playing methods.

3. An examination of various types of artifacts which have been found in association with ballcourts, in order to determine their possible use.

4. A study of the roles of rubber ball games amongst the different culture groups and the relationship of the games to the economy, religion, and political organisation of these groups.

The collection of data was limited to recorded historical, anthropological and archeological sources. Standards for external criticism, relating to the validity of the sources, and internal criticism, relating to the

content of sources, were set up by the writer. External criticism was based on the recognition of authors and correspondents as authorities. Internal criticism was based, as far as possible, on a correlation between corresponding sources. The writer recognized the fact that many descriptions of the rubber ball games, associated structures, and artifacts were made by sources not familiar with the field of physical education. These descriptions were also influenced by the cultural environment of the authors.

Inventories of ballcourts discovered, to date, in Mesoamerica and Arizona, were presented. Two hundred and sixty-nine Mesoamerican and eighty-seven Arizona ballcourts were described. Twenty-four ballcourts from the Greater Antilles were described in less detail.

The following hypotheses were examined:

1. That a number of versions of competitive rubber ball games was played in the three areas.

2. That rubber ball games had a secular as well as a religious function; and that the relative importance of one aspect over the other, varied over space and time.

The first hypothesis was supported by considerable archeological evidence; the second by both historical and archeological evidence. In both cases, the evidence presented showed that more variations existed in ballcourt structures,

playing methods and the role of the game in societal structure, than has been previously suggested.

ACKNOWLEDGEMENTS

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My wife, Judy, served as typist, editor and patient counsellor: if this study is of value, it is due in large part to her interest and enthusiasm.

PREFACE

The role and significance of ball games in early societies has received little attention by historians. Ball games have been generally accepted as secular activities with recreational purposes. However, this generalization has done much to obscure other aspects of play which were, and still are, significant in various societies. Roberts, Arth and Bush admit that anthropology "has yet to produce a general theory which deals with such anthropological problems as the description and explanation of the historical development of games, their world distribution and their functional significance in various societies."[1] There is clearly a need for considerable research before such a theory can be evolved.

The cultures of Mesoamerica, Arizona and to a lesser extent the Greater Antilles, have received considerable attention by anthropologists and archeologists. Despite these efforts, a complete description of these cultures is not yet available.

In these cultures a ball game, played within the confines of a structural court and having a ritualistic

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[1] John M. Roberts, Malcolm J. Arth, and Robert R. Bush. "Games in Culture," American Anthropologist, LXI (August, 1959), p. 597.

significance, played an important role. As with other aspects of the cultures, a full description of the game and its function is unavailable.

The purposes of this study were:

1. To investigate the origin and distribution of ballcourts in the three areas and to examine them for differences in structural type.

2. To compare the early written accounts of the game in Mesoamerica and the Greater Antilles with archeological findings from earlier periods, in order to postulate possible methods of play.

3. To examine the artifacts which have been found in association with ballcourts in order to determine their possible use.

4. To study the roles of the ball game in the different culture groups and the relationship of the ball game to the economy, religion, and political organisation of the culture groups.

The study was, then, essentially an historical analysis attempting to collate all of the available information into a concise and simple form.

Two hypotheses were examined in the study: the first was that a number of versions of a competitive rubber ball game were played in the three culture areas; second, that

rubber ball games had a secular as well as a religious function in these areas and that the relative importance, of one aspect over the other, varied over space and time.

For the purpose of this study data was limited to recorded historical, as well as recorded and observed anthropological and archeological data. Reproductions of ballcourt structures and associated artifacts in the form of photographs and sketches were used to illustrate the study.

An attempt was made, in the study, to differentiate between the competitive rubber ball game played on structural courts in Mesoamerica, Arizona and the Greater Antilles, and the types of rubber ball games played in South America. The ecological and societal factors which determine the distribution of competitive rubber ball games were examined.

Our knowledge, to date, of rubber ball games in these areas depends to a large extent on archeological data. Because of this, certain assumptions must be made concerning the possible use of structures and artifacts. These assumptions were outlined, together with general chronological sequences applicable to the three areas. Definitions were kept to a minimum. Sketches and illustrations were used to obviate the need for a large number of definitions and lengthy descriptions.

Previous ballcourt classifications were extended to include ballcourt types in all three areas. Previously recorded inventories of known ballcourts were revised and simplified. The data collected in this phase of the study was organised on a geographical basis. In each geographical area the material was organised on a chronological basis. At the end of this and following chapters the data was summarized, and, wherever possible, conclusions drawn.

Playing methods and the possible use of certain artifacts associated with the game were examined by using recorded ethnohistorical data and interpretive hypotheses of numerous eminent anthropologists and archeologists.

Primary sources were preferred to secondary sources, except in the case of studies similar to the present study, such as Stern's study of the rubber ball games of the Americas.[2] Wherever secondary sources were used, an attempt was made to relate their content to primary sources and/or to other secondary sources.

---

[2]Theodore Stern, "The Rubber-Ball Games of the Americas," (Monographs of the American Ethnological Society, XVII, New York : J. J. Augustin, 1950).

TABLE OF CONTENTS

CHAPTER		PAGE
I	INTRODUCTION	1
	Relations between the distribution of rubber ball games and ecology . . .	7
	Distribution of rubber	8
	Relations to culture	13
11	ASSUMPTIONS, DEFINITIONS AND CHRONOLOGY	17
	Assumptions	17
	Definitions	18
	Chronology	20
III	BALLCOURT STRUCTURES	23
	Review of Literature Describing Ballcourts.	23
	Types of Ballcourts in Mesoamerica. .	25
	Types of Ballcourts in Arizona. . . .	31
	The Antillean type Ballcourt	34
	The Dating of Ballcourts	36
	Highland Guatemala Courts.	38
	Lowland Maya Courts	39
	The Valley of Mexico and Surrounding Areas	42
	Northern and Western Mexico	46
	Ballcourts in Arizona	47
	Ballcourts in the Greater Antilles.	56

CHAPTER		PAGE
	Summary	60
IV	PLAYING METHODS AND FUNCTION OF THE GAME.	63
	The Greater Antilles	64
	Mayan Versions.	70
	Mexican Versions	77
	Northern and Western Versions	86
	The Game in Arizona	95
	Summary	98
V	PLAYERS' EQUIPMENT.	101
	Mexican Stone Yokes	104
	Antillean Stone "Collars"	110
	Elbow Stones.	116
	Three-Pointed Stones	118
	Palmate Stones and Thin Stone Heads or Hachas	122
	Gloves, Arm Wrappings and Handstones .	128
	Face Masks	135
	Knee Protectors	137
	Summary	141
VI	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.	144
	Summary	144
	Conclusions	146
	Recommendations	147
BIBLIOGRAPHY		148

PAGE

APPENDIX A: 1. Description of Mesoamerican Culture Area 161

11. Description of Southwest (Arizona) Culture Area 169

111. The Geographical and Cultural Factors in the Greater Antilles. 172

APPENDIX B: 1. Inventory of Mesoamerican Ballcourt Sites. 177

11. Inventory of Ballcourts in Arizona 187

APPENDIX C: MAPS 193

APPENDIX D: European Ball Games of the Sixteenth Century 204

LIST OF FIGURES

FIGURE		PAGE
1.	Schematic Ballcourt with Nomenclature . . .	27
2.	Restoration Sketch of a Typical Mesoamerican Ballcourt of ca. 1200 A.D.	27
3.	Sections through Center of One Side of Various types of Mesoamerican Ballcourts.	29
4.	Plan of the Large Ballcourt at Snaketown, Arizona	29
5.	Plan of the Ballcourt at Stove Canyon, Arizona	33
6.	Casa Grande Type Ballcourt at Winona Village, Northern Arizona	33
7.	Ballcourt at Zaculeu in Highland Guatemala.	35
8.	Court 1 at Snaketown, Arizona	35
9.	Ranch Creek Type Ballcourt near Tucson, Arizona	51
10.	Casa Grande Type Ballcourt near Phoenix, Arizona	51
11.	Artist's Impression of Players on a Mesoamerican Ballcourt.	92
12.	Tarascan Pottery Ballcourt with Players and Spectators	94
13.	A Carved, Open Stone Yoke from Tajin, Veracruz	105
14.	A Plain, Open Stone Yoke from Central Veracruz	105

FIGURE PAGE

15. Ball Game Playing Equipment from Mesoamerica 107

16. Subject Wearing a Stone Yoke and Holding a Small Handstone 108

17. Subject Wearing a Stone Yoke and Holding a Large Handstone 108

18. Typical Antillean Stone "Collars" 111

19. Antillean Stone "Collars" Worn in Manners Suggested 112

20. Slender Puerto Rican Stone "Collar" and Special Form of Wooden Prototype 112

21. Puerto Rican Elbow Stones 117

22. Elbow Stones Showing Probable Manner of Completion 119

23. Puerto Rican Stone Head or Three-Pointed Stone (Front View) 119

24. Puerto Rican Stone Head or Three-Pointed Stone (Lateral View) 119

25. Lateral and Face Views of Puerto Rican Three-Pointed Stones 121

26. Puerto Rican Stone "Collar" with Attached Three-Pointed Stone 121

27. Stone-Feather Type Palmate Stone from Central Veracruz (Rear View) 123

28. Stone-Feather Type Palmate Stone from Central Veracruz (Side View) 123

FIGURE PAGE

29. Stone-Feather Type Palmate Stone from Central Veracruz,(Front View). 123

30. Elaborately Carved Palmate Stone from Xiuhil, Veracruz,(Front View).. 123

31. Elaborately Carved Palmate Stone from Xiuhil, Veracruz,(Side View) 123

32. Carved Relief Panel from a Ballcourt at Tajin, Veracruz. 125

33. Carved Palmate Stone from Xiuhil, Veracruz . 125

34. Stone Sculpture of Ball Game Player Wearing Stone Yoke, Thin Stone Head and Palmate Stone 127

35. Pottery Figurine of a Ball Game Player Wearing a Yoke and a Palmate Stone, (Side View) 127

36. Pottery Figurine of a Ball Game Player Wearing a Yoke and a Palmate Stone, (Front View) 127

37. Thin Stone Heads or Hachas from Oaxaca and Highland Guatemala 129

38. Panel from Larger Ballcourt at Tajin,Veracruz 131

39. Palmate Stone from San Marcos en Teocelo, Veracruz. 131

40. Loop-Handled Ball Game Handstones 133

FIGURE		PAGE
41.	Figurines and Sculptures Depicting Ball Game Players Wearing Playing Equipment . .	136
42.	Clay Figure of Player Wearing a Yoke, Knee Pad, Arm Wrappings and Holding a Mask . .	138
43.	Pottery Figurines of Ball Game Players Wearing Face Masks and Gloves	138
44.	Relief of Ball Game Player Wearing a Yoke, Knee Pad and Other Knee Calloused	140
45.	"U" Shaped"Knee Yoke" from Guerrero,Mexico	140

LIST OF TABLES

TABLE		PAGE
1.	Mesoamerican Chronological Chart	20
11.	Arizona Periods and Phase Names for the Three Cultures Using Ballcourts, With Correlation to Cultural Manifestations	21
111.	Chronological Chart for the Greater Antilles .	22
1V.	Tentative Criteria for Ballcourt Types in Arizona	49
V.	Dimensions of Puerto Rican Stone "Collars" . .	113
V1.	Inventory of Mesoamerican Ballcourt Sites . .	177
V11.	Inventory of Sites with Ballcourts in Arizona.	187

LIST OF MAPS

MAP		PAGE
1.	Culture Areas and Subareas of Mesoamerica, the Southwest and the Greater Antilles . .	194
11.	Mesoamerican Archeological Sites and Regions	195
111.	Mesoamerican Ballcourts Used During the Preclassic and Early Classic Periods . . .	196
1V.	Mesoamerican Ballcourts Used During the Late Classic Period	197
V.	Mesoamerican Ballcourts Used During the Early Postclassic Period	198
V1.	Mesoamerican Ballcourts Used During the Late Postclassic and Historic Periods	199
V11.	Mesoamerican Courts Used During Unknown Periods	200
V111.	Archeological Regions and Subareal Divisions of the Southwest Area	201
1X.	Range of Ballcourts in Arizona and New Mexico	202
X.	Distribution of Ballcourts Through Phases in Arizona and New Mexico.	203

CHAPTER I

INTRODUCTION

The Spaniards first witnessed the playing of rubber ball games in Hispaniola (Haiti-Dominican Republic). Shortly afterwards, their excursions onto the mainland brought further observations of rubber ball games which were played with a solid rubber ball of remarkable resilience, and were closely related to the games which they had witnessed in the Antilles. Further European expansion in both Middle and South America, especially by missionaries, brought to light many versions of the game.

Early written accounts of rubber ball games in the Americas had a tendency to generalise, and so included all games played with a rubber ball in the same category. However, it is clear that initially such games should be placed into two broad categories. The first of these shares with lacrosse, shinny and the kicking race in North America, and with hockey in South America, the element of competition between two teams,[1] while the second, which can be described

---

[1] S.Culin, "Games of the North American Indians," Bureau of American Ethnology, Twentyfourth Annual Report, Washington, 1907, and E.Nordenskiold, "The Changes in the Material Culture of Two Indian Tribes under the Influence of New Surroundings," Comparative Ethnological Studies, No. 2. Goteborg, 1920, pp. 101-109, and J. M. Cooper, "Games and Gambling", in Handbook of South American Indians:

generally as the "circle" game (from the ring formed by the players), closely resembles shuttlecock and the maize leaf ball games of South America in its non-team, largely non-competitive characteristics.[2] In comparing the features of the two categories of games, it is quite evident that the rubber ball is almost the sole element held in common.

For comparative purposes three main features of the ball game have been selected as either distinguishing or commonly held features. The structural characteristics of the ballcourt is the first feature. The second is the manner of play, including scoring principles and methods of starting the game. The third feature is the type of playing equipment worn and used by the players during the course of the game.[3]

The validity of the ensuing account is somewhat

Comparative Ethnology of South American Indian, Bureau of American Ethnology, Bulletin 143:5, Washington, 1949, pp. 503-524.

[2]Theodore Stern, "The Rubber Ball Game of the Americas," Ethnological Society Monographs, No.XVll, (New York: J. Augustin, 1950), p.2.

[3]ibid, p.3. Stern chose methods of striking the ball and manner of play - that is, learned behaviour- as more fundamental to the game and more capable of overstepping . . . "the threshhold of cultural differences than such complex features as structural ballcourts and religious associations." His search for South American origins no doubt prompted him partially to eliminate the ballcourt variable.

impaired by a number of inherent defects. Paramount among them is the unevenness of the various historical accounts in respect to fullness of reporting. This situation restricts the adequacy of these reports for comparative purposes. Coupled to this is the reliance placed on subjective interpretation of art works and artifacts which have been left behind. It is also possible that some evidence relating to the ball game has eluded the researcher. Finally, the occurrences as reported herein are far from being simultaneous, for they range from the Maya of the fifth century A. D. to the indigenous peoples of present day Nayarit and Sinaloa.[4]

Analysis,[5] reveals that there are essentially two fundamental types of rubber ball games.

The simpler form embodies play mainly for self and often contains no competitive principle. Consequently, it is usually played as a domestic sport, often by men and women. In it, players arrange themselves in a circle and attempt to keep the ball in the air by striking it with hand, foot, knee or head. This type of game is still played in South America, and probably has a very long history.[6]

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[4]States on the west coast of Mexico.

[5]Especially by Stern (1950) op. cit. who examined this relationship in great detail.

[6]T. Stern, op. cit. pp. 15-18, 24, 91-92.

The second type of game, which forms the major subject of this paper, emphasises aggressiveness and is highly competitive. Players are, as a rule, able-bodied men. Matches between two teams consisting of two or more members, often representing different communities, are characteristically accompanied by heavy wagers. The heavy, solid, rubber ball introduces a dangerous element into the game. The game takes place in a specially prepared court, of which each team defends one half. Accepted rules are observed, and officials preside over their use in the game. Only prescribed portions of the body may be used in striking the ball, such as the head, shoulder, hip and buttocks. In most cases the use of the hands is forbidden. Points are normally scored upon a body fault, a shot that passes the rear boundary, or one that stops in the rival's court. The winning number of points is agreed on beforehand, although in certain cases the scoring of a special goal decides the winner outright. Spectator participation is usual, and in many cases is an integral part of the game.

Apart from the methods of play, other interesting comparisons may be made between the two categories of rubber ball games and other games in North and South America. The circle game, of which there are many versions, occurs widely throughout the tropical forest and eastern marginal lands of South America in the form of the maize leaf ball

game and a variant played with a skin or bladder covered ball.[7]

A description of the circle game, as played with a hollow rubber ball, comes specifically from the Majos-Chiquitos culture area, where it appears together with a competitive-type rubber ball game. It is also present in the Guianas and adjacent areas as well as in eastern Brazil.[8]

Games similar to these are rarely mentioned outside South America. However, dictionaries of Middle American languages frequently contain terms referring to ball games in which the ball is struck with the knee of hand.[9] On lexical grounds alone, they can be regarded as completely separate from the competitive rubber ball game, the name for which, in many instances, contains the morpheme for rubber. In North America, ball games of a non-competitive

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[7] E. Nordenskiold, "An ethno-geographical analysis of the material culture of two Indian tribes in the Gran Chaco," Comparative Ethnological Studies, No. 1, Goteborg, 1919, p. 160. (Maize leaf ball games), and J. M. Cooper, "The Culture of the Northeastern Indian Hunters: Reconstructive Interpretation," in Man in Northeastern North America, (F. Johnson ed.) 1946, pp. 272-305, (bladder covered ball games).

[8] Stern, op. cit. pp. 15-18, 24. Stern describes these in detail.

[9] ibid., p. 93. Stern cites one instance in which it is reported that the game of hand ball is described as a European introduction, very probably one of the trio, paume, pallone, and pelota. How far this may also hold for the cognate games reported by other dictionaries is uncertain.

nature are very rare.[10]

North America offers many competitive ball games played between two teams. They are widespread on that continent, and offer many parallels to the Middle American game. Lacrosse, shinny and the kicking race present a continuous distribution which, in the case of shinny and the kicking race, overlap the northern limits of the rubber ball game in northern Mexico and Arizona.[11]

Contiguous to the southern extremity of the rubber ball game, in the Gran Chaco, is hockey.[12] This is played as a competitive team game. It seems quite likely that the similarities between shinny, hockey and lacrosse arise from an historical relationship. They obviously represent diversified, widespread descendants of a ball and stick game which was in turn possibly ancestral to the competitive

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[10] S. Culin, "Games of the North American Indians," Twentyfourth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institute 1902 - 1903, (Washington:Government Printer, 1907),pp. 563-565.

[11] ibid.

[12] A. Metraux, " Etudes d'Ethnograpic Toba-Pilaga (Gran Chaco), Anthropos, Vol., 32, 1937, pp. 171-194, 378-401.

rubber ball game.[13]

Relations between the competitive rubber ball game and ecology

The distribution of this game seems certainly a direct result of ecological factors, as it occurs mainly where sources of rubber are indigenous. In South America it is absent from the Andean highlands. In the Chaco it is found only on the northern margins, where it is relatively easy to import balls from the tropical forest area. The game existed in Northern Mexico and in Arizona due to the presence of a rubber-bearing desert shrub which is cited in the next section. The interesting fact is that within the prolific rubber producing areas, the game developed only along simple domestic lines. For example,

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[13] S. Culin, loc. cit. and also R. L. Beals and P. Carrasco, "Games of the Mountain Tarascans," American Anthropologist, Vol.46:4, Menasha, 1944, pp. 516-522. In lacrosse, competing teams comprising players equipped with one or two racquets, attempt to carry or throw the ball to a goal at the oppostite end of the field. In another version in the southwestern United States the ball is struck with the palm instead of a racquet. Usually the winning number of points is decided before the match. Referees control the match and betting is heavy.

Shinny differs from lacrosse chiefly in that the ball is propelled along the ground with a bat. It has less complex societal associations.

The kicking race is played by teams which race over a prepared course, each team kicking a ball or billet. Betting is common and inter-community games are popular.

Hockey, most forms of which resemble shinny, are described for central Mexico (Beals and Carrasco, loc.cit. and Metraux op. cit. p. 388f). Metraux mentions inter-community play, use of referees and a pre-determined winning score.

in the Guianas and eastern Brazil, only the domestic circle game is played.

There have been many suggestions that the difficulty involved in forest clearing may have prevented the development of the competitive type rubber ball game in the Americas.[14] However, the absence of the competitive forms in the relatively easily cleared highlands of Brazil and the Savanna areas of the Guianas, on the one hand, and the development of the competitive game to great heights in the heavily forested parts of Veracruz and the Lowland Maya areas of Mesoamerica seem to destroy any direct correlations which may have been hypothesized.

Whatever its ancestral prototype, the rubber ball game owes many of its distinctive features to the resilient nature of the ball. The evolution of the rubber ball, no doubt, took place in an area where rubber was already known and its technology was familiar. The geographical incidence of the game must be projected against the occurrence of indigenous sources of rubber and the development of a sedentary form of living based on agriculture.

Distribution of Rubber

Rubber may be procured in an aqueous(latex) suspension

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[14] Stern, op. cit., p. 95

from a number of plants and trees. Although they are most prolific in tropical rain forest regions, they are by no means limited to that zone. In differing forms, sources of rubber are available from the Southwestern United States almost to the northern limits of the Gran Chaco in Argentina. The plateaux of the Andes are devoid of sources, although they are present on the eastern slopes.

The chief members of this group of rubber bearing plants and their location is:

Hevea (Siphonia). The ten species of these rubber trees flourish mainly in low, poorly drained land, though this genus does occur on slopes up to about 3000 feet in altitude. It is distributed in the Amazon basin including parts of eastern Peru. Some are also found in the valley of the Paraguay and to the north, in the Guianas.

Castilla. This latex-producing tree is located in the upper Amazon drainage area, lowland Ecuador, and northward through Middle America into the Tierra Caliente of Mexico.

Sapium, (related to the Hevea), is found in the central Amazon basin, reaching westward to the Andes.

Hancornia. The natural environment of this genus is the semi-arid tablelands of Brazil, at altitudes often above 3000 feet. Another member is Indian hemp, found in the Southwestern United States. This plant has been suggested as a potential rubber source.

Manihot (related to Hevea), yields a rubber which, because of the presence of hydrocyanic acid, is somewhat restricted in use. It is found chiefly in the semi-arid sections of eastern Brazil.

Guayule, (Parthenium argentatum), a rubber bearing desert shrub of the Compositae family, is a native of the southwestern United States and Northern Mexico south to Puebla. Guayule, which grows at an altitude of from 6000 to 8000 feet, is a perennial shrub producing a rubber free from latex. In some regions, and especially in Durango (Mexico) it is said to have long been a source of rubber, extracted by chewing the bark of the shrub and then rolling it into balls.[15]

Milkweed, notably Asclepias subalta and Asclepias eroas of the deserts of southern California and Arizona and other varieties growing in Mexico, are rubber producers which may have been sources of rubber during aboriginal times.[16]

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[15]Stern, op. cit., p. 6

[16]O. F. Cook, "Natural Rubber," Smithsonian Institute of Washington, Annual Report for 1943, Washington, pp.363-411, in Stern, op. cit., pp.4-6 and H. M. Hall and L. Long, "Rubber Content of North American Plants," Carnegie Institute of Washington, in Stern, op. cit., pp. 4-6, and J. P. Goode, Goode's School Atlas, New York: The MacMillan Company, 1946.

In pre-Columbian times the inhabitants of South, Middle and North America could have obtained the relatively small amount of rubber required by simply slashing the stem, roots or leaves and collecting the latex or sap. The water was then evaporated and the rubber coagulated by letting it stand. Usually the process was accelerated by using the heat of a fire or by the addition of other plant products.[17]

The manufacture of rubber balls was, therefore, possible over a very extensive area by means of a very simple technological process. In addition, rubber balls were distributed well outside the natural limits of rubber-bearing plants. During the reign of Montezuma the Aztecs exacted, by tribute from the lowland tribes, some 16,000 rubber balls each year.[18]

There has been some controversy over the source of natural rubber in the Antilles. Both Fewkes[19] and Nordenskiold[20] have stated that no rubber bearing plants

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[17] E. Nordenskiold, "Modifications in Indian culture through inventions and loans," Comparative Ethnological Studies, No. 8, Goteborg, 1930, pp. 28-30.

[18] F. S. Clavigero, History of Mexico, (Philadelphia: Thomas Dobson, 1917) pp. 405-411.

[19] J. W. Fewkes, "The aborigines of Porto Rico and the neighbouring Islands," Bureau of American Ethnology, Twentyfifth Annual Report, (Washington:Government Printing Office, 1907), p.85.

[20] E. Nordenskiold, (1930), op. cit., p. 108.

existed in the Antilles. There are, however, good reasons to believe that a native source of rubber was available, and was exploited during pre-Columbian times. Las Casas,[21] who lived for many years in the Antilles, writes of a rubber-producing tree growing on both Hispaniola (Haiti) and on the mainland of Mesoamerica. From a knowledge of the natural distribution it was possibly a member of the Castilla genus.

The distribution of natural rubber sources, then, seems to have a very large bearing on the occurrence of rubber ball games even though in some instances the game did occur outside the range of natural supply.[22]

However, rubber ball games have not been reported from vast areas of the middle and lower course of the Amazon system and coastal Brazil, where natural rubber sources have been exploited since well before the Spanish Conquest.[23] Future research may contradict the former statement; or perhaps will support the assumption that cultural factors had a greater bearing on the incidence of rubber ball games, especially the competitive, team game

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[21] B. De Las Casas, Historia de las Indias, Biblioteca Mexicana (ed. J. M. Vigil), Mexico, 2 Vols., 1909, p. 159, cited in Stern, op. cit., p.7.

[22] Especially Central Mexico and highland Guatemala.

[23] Stern, op. cit., p. 7.

forms of play, than is generally admitted.

Relations to culture

Competitive team play with a rubber ball is confined to peoples who are primarily dependent upon agriculture for subsistence. Evidence of the existence of the game can only be found where settlements were of a reasonable size and were relatively permanent. Another factor which seems to have been prerequisite was the existence of some surplus food. These two factors allowed sufficient leisure time for players and spectators to participate in games.

Although no definite correlations between certain social institutions and the occurrence of the game may yet be assumed, there are particular features in the societal environment which coincide with features of the game itself. An evolved political organisation corresponds readily with a game which fosters a sense of unity through competition with another group as well as the cooperative patterns engendered in team play.

Stern suggests that it seems to be more than coincidental that strong parallels exist between warfare patterns and the distribution of the competitive ball game.[24] In Mesoamerica, competition between two teams from separate

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[24]Stern, op. cit., map 6, p. 120. However, this applies only to Mesoamerica. The Hohokam of Arizona were

communities in a vigorous, daring game implies the occasional substitution of the game for overt warfare. This observation is strengthened by the knowledge that players are also the warriors of the community. It may be conjectured that games of this type[25] may also serve as a safety valve to relieve suppressed inter-community conflicts, thus operating to sublimate belligerent tendencies and directing them into harmless action.[26]

The ceremonial function of the game has been emphasized by most writers. However, although the evidence to support this function is strong for many areas in Mesoamerica, the placing of ballcourts in the peripheries of Hohokam settlements in Arizona and the recreative flavour of chroniclers'reports from the Greater Antilles suggests a more secular function of the game. Therefore, a general statement concerning function, cannot be validly postulated. The appearance of the game in the course of ceremonials may be merely a direct function out

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not war-like people, yet it seems that the ball game was very popular in their lives. The same might be said of the peaceable Arawak of the Greater Antilles. Therefore, Stern's observation seems valid only for Mesoamerica.

[25]Lacrosse in North America (Culin, op. cit., p.564) and hockey in South America (Metraux, op. cit., pp. 171-194) are also considered to have the partial function of substitutes for overt warfare.

[26]Stern, op. cit., p. 97.

of the gathering of large groups. If it is possible to draw a parallel in contemporary society, then perhaps the association between the Modern Olympic Games and track and field events is an analogous situation.

The Aztec version of the game may be cited as a case where it was only with the growth of ceremonialism that the game reached its peak. Religious and ceremonial traditions influenced the function and distribution of the game before A.D. 900 in many subareas of Mesoamerica. However, after this time a secularization of the game is apparent.[27] This change in function coincides with increased militarism and a greater complexity of socio-political organization in central Mesoamerica.

Competitive rubber ball games, then, occur only where certain societal features exist. The game is congruent with agricultural communities which have some degree of political integration. In this type of society the game serves as a sport, as well as a means of exhibited prowess, and at times as a means whereby the warriors maintain aggressive attitudes in times of political peace. These seem to be the major issues deciding the adoption or rejection of the game. Other local circumstances, such as tribal prestige and strength and regularity of ceremonial gatherings, seem

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[27] cf. Albert H. Schroeder, "Ballcourts and Ball Games of Middle America and Arizona," Archeology, Vol. 8, No. 3, Brattleboro, 1955, pp. 160-161.

to have had some bearing on the development of the game.[28]

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[28]E. S. Spinden, "The Place of Tajin in Totonac Archeology," American Anthropologist, 35:3, 1933, pp. 259-265; and J. C. McGregor, Southwestern Archeology, (Urbana:University of Illinois Press, 1965), p.191. This writer attempts to explain the possible reasons for the rejection of the game by the Mogollon society in Arizona while their neighbours, the Hohokam, of similar social structure, promoted the game. A detailed discussion of this and other cultural determinants will follow in Chapter 4 of this paper.

CHAPTER II

ASSUMPTIONS, DEFINITIONS AND CHRONOLOGY

One of the difficulties associated with an historical and functional analysis of the rubber ball game is the imbalance in evidence available for each of the three areas. For some sub-areas of Mesoamerica and the Antilles, both archeological and historical information is available. For the Valley of Mexico the evidence is based mainly on ethno-historical information, whilst only archeological evidence is available for Arizona.

Assumptions

We know that rubber ball games were played in what are called ballcourts in Mesoamerica and the Antilles. We are not absolutely certain that ball games were played in structures termed ballcourts in Arizona. However, because of the analogies with ballcourts in Mesoamerica, for which historical verification exists, and the weight of authority confirming the validity of these analogies,[1] we may accept the widely and strongly held assumption that ballcourts in Arizona were used for the playing of a ball game.

An examination of the differences in ballcourt construction over both time and area suggests that this assumption may be expanded. The assumption, then, is that

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[1] Chester S. Chard, "Distribution and Significance of Ballcourts in the Southwest," Papers of the Excavators' Club, Cambridge, Massachusetts, 1940, p.12.

ballcourts in Arizona were used for ball games which were probably closely related to the rubber ball game played in Mesoamerica. It is not assumed that this was the only type of game or activity played within the confines of these structures.[2]

Definitions

For the three major areas studied in this paper, it is assumed that the major purpose of ballcourts was for the playing of a rubber ball game. Even when "ball game" is used in the singular, it is assumed that several different versions of a rubber ball game were played. In other words the term is used loosely in order to be more inclusive.

The set of ballcourt terms devised by Satterthwaite[3] has been used for comparative purposes throughout Mesoamerica. However, many of the terms lead to some confusion when applied to ballcourts in Arizona or the Antilles. A ballcourt is defined by Satterthwaite[4] as ". . . a symmetrical or quasi-symmetrical arrangement of surfaces in more than one plane, especially designed for the playing of an aboriginal game involving the bouncing of a rubber ball against some

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[2] cf. ibid., pp. 12-13.

[3] Linton Satterthwaite, "Ballcourt Terminology," Piedras Negras Archeology: Part IV; Ball Courts, No. 1. University Museum, University of Pennsylvania, Philadelphia, 1944, pp.4-7.

[4] ibid, p.4.

of these surfaces." Reference to a ball game within this definition is supported by Mesoamerican historical evidence but not by available data from Arizona. In the Antilles, archeological evidence suggests that in most instances the court floor was the only surface which provided a medium for bouncing the ball.

Kelly[5] recognises the inappropriateness of Satterthwaite's definition when applied to ballcourts in Arizona, and has modified it accordingly:

> A Southwestern (Arizona) ballcourt is a symmetrical or quasi-symmetrical arrangement of unroofed surfaces in more than one plane which is conjectured to be especially designed for the playing of an aboriginal game involying a rubber ball or for some other group activity.[6]

This definition may also be applied to Antillean courts if the words "conjectured to be" are deleted.

All three definitions are more general than specific. As courts within each region vary considerably in such characteristics as shape, size, orientation, temporal placement and arrangement within a site, a general definition is more inclusive than specific.

Many of Satterthwaite's architectural terms, such as

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[5]Roger E. Kelly, "The Socio-Religious Roles of Ball Courts and Great Kivas in the Prehistoric Southwest," Masters' Thesis, University of Arizona, Tucson, 1963,p.6.

[6]ibid.

"end unit" or "side unit", are used to describe ballcourts in all three areas. In certain instances, slightly different but self-explanatory terms are used. Reference to the relevant sketches and photographs, which illustrate the architectural features, obviates the necessity for a large number of definitions.

Chronology

Three separate dating sequences are used in this study. For the Mesoamerican area the Goodman-Martinez-Thompson(GMT) correlation is used. With this correlation the following time periods are used when referring to the Mesoamerican area:

TABLE I

MESOAMERICAN CHRONOLOGICAL CHART

Historic	-	1520	to	Date
Late Postclassic	-	1200	to	1520 A. D.
Early Postclassic	-	900	to	1200 A. D.
Late Classic	-	600	to	900 A. D.
Early Classic	-	300	to	600 A. D.
Preclassic	-	Prior to 300 A. D.		

(Based on Willey's classification)[7]

[7]Gordon R. Willey, An Introduction to American Archeology, Vol.1, (Prentice Hall Inc., Englewood Cliffs, 1966), pp. 90-91. However, while these periods are

The Hohokam, Mogollon, and Sinagua (sub-areas), which together make up the Arizona area as far as this study is concerned, are dated by dendrochronology and other means of cultural cross referencing.[8] The periods and phases set out in Table II below have been adapted from McGregor.[9]

TABLE II

ARIZONA PERIODS AND PHASE NAMES FOR THE THREE CULTURES USING BALLCOURTS, WITH CORRELATION TO CULTURAL MANIFESTATIONS

Time A. D.	Period	Mogollon - (Phase) -	Hohokam - (Phase) -	Sinagua - (Phase) -
1300 -	Culminant			Clear Creek
1100 -	Classic	Tularosa Reserve	Classic Soho	Turkey Hill Elden
900 -	Dissemination	Three Circle	Sedentary Sacaton	Padre Angell Winona
700 -	Adjustment	San Francisco	Colonial Santa Cruz	Rio de Flag Sunset
500 -	Settlement	Georgetown	Colonial Gila Butte	Cinder Park
0 -	Founder	Pine Lawn	Pioneer Snaketown Sweetwater	

applicable to most subareas in Mesoamerica, there is some variation in a few subareas, notably in Mesa Central, where the Early Postclassic period begins in ca.700 A. D. with the fall of Teotihuacan, while in the Lowland Maya subarea the Late Classic does not begin until ca.900 A. D.(Personal communication with R. Gruhn).

[8] As G. R. Willey, op. cit., p. 188,points out, the Hohokam chronology lacks tree-ring dates and so is co-ordinated with that of the Anasazi (Northern Arizona and New Mexico), which has been fairly accurately fixed by tree-ring dating and archeological stratigraphy, and that of the Mogollon.

It should be noted that the earlier periods are relatively poorly dated, and "it is probably not until about A. D. 700 or even later that tree-ring dates and culture correlations may be relied upon most fully."[10]

The dating sequence employed for the Greater Antilles is that devised by Rouse[11] by means of stratigraphic analysis of refuse deposits, combined with cross-dating in terms of trade objects. The time periods and designations are as follows:

TABLE III

CHRONOLOGICAL CHART FOR THE GREATER ANTILLES

Period IVb	1509 - 1584 A. D.
Period IVa	1437 - 1509 A. D.
Period IIIb	1317 - 1437 A. D.
Period IIIa	1193 - 1317 A. D.
Period IIb	1089 - 1193 A. D.
Period I	- 929 A. D.

(After Rouse: 1951, p.251)

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[9] John C. McGregor, Southwestern Archeology,(2nd Ed) (Urbana:University of Illinois, 1965), p.73.

[10] ibid.

[11] Irving Rouse, "Areas and Periods of Culture in the Greater Antilles." Southwestern Journal of Anthropology, Vol. 7, Albuquerque, 1951, p. 251.

CHAPTER III

BALLCOURT STRUCTURES

Several attempts have been made to classify these complex architectural structures. The first specific attempt was that of Acosta (1940),[1] which was later expanded into the A, B, C system of Acosta and Moedano Koer (1946)[2]. Corbett (1939),[3] Stern (1950),[4] and Borhegyi (1960)[5] attempted summary classification within the context of other material which was given greater attention. Smith (1955 and 1961)[6] provided the first comprehensive classification, based

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[1] J. R. Acosta, "Exploraciones en Tula, Hidalgo,1940," Revista Mexicanna de Estudios Anthropologicos, t.s., 1940, Mexico, pp. 239-248.

[2] J. R. Acosta, and Hugo Moedano Koer,"Los juegos de pelota," In: Mexico prehispanico, Antologia de Esta Semana, Mexico, 1946, pp. 365-384.

[3] J. M. Corbett, "Ballcourts and Ball Games of the Ancient American Indians,"(Unpublished Master's Thesis, University of Southern California, 1939).

[4] Stern, op. cit.,

[5] S. F. de Borhegyi, "America's Ballgame," Natural History, New York, 69:1, 1960, pp. 48-59.

[6] A. L. Smith, "Archeological reconnaissance in Central Guatemala," Carnegie Institution of Washington, Publication No. 608, Washington, D. C. 1955; and A.L. Smith,"Types of Ball Courts in the Highlands of Guatemala," In: Essays in Pre-Columbian Art and Archeology,(Cambridge, Massachusetts: Harvard University Press, 1961) pp. 100-125.

mainly on Guatemalan excavations. More recently Clune (1963)[7] modified Smith's classification to provide more convenient subdivisions, and applied the classification to all known courts in Mesoamerica.

Acosta and Moedan Koer's[8] A, B, C system was an attempt to illustrate the overall changes throughout Mesoamerica. From the evidence they produced, certain conclusions seem valid; for example,the increasing angle of ballcourt playing walls from the late Preclassic period to the Late Postclassic period and, secondly, the fact that certain primary characteristics are restricted to a particular area, for example, the use of rings on the court walls.

The classification which follows is not an original effort. It is based on those of Smith,[9] and Clune,[10] but is extended to include courts outside Mesoamerica.

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[7] F. J. Clune, A Functional and Historical Analysis of the Ballgame of Mesoamerica,(Doctoral Dissertation, U. C. L. A.,1963).

[8] J. R. Acosta, and H. Moedan Koer, op. cit., pp. 365-389.

[9] A. L. Smith, (1955) op. cit., p. 2, and A. L. Smith, (1961) op. cit., p. 116f.

[10] F. J. Clune, op. cit., pp. 11-41, and 312 - 221.

To date, the evidence suggests seven[11] major distinguishing features of ballcourts which allow categorization into the same number of types. The first type, and also the earliest in all areas except Monte Alban, is termed the open-ended court. It consists of two parallel mounds, the ranges, with no construction for an end wall. The playing walls normally have very shallow angles, some as low as 10 degrees; and the playing alleys may or may not have benches, as is shown in Figure I,c. The walls are usually from 24 to 32 meters long, and in most cases average between 2.5 to 3 meters in height. Smith[12] suggests that end zones may have been delimited by lines marked on the ground, but he found no evidence of such lines.

The second type, which appears almost exclusively in the highlands of Guatemala, is named by Smith[13] "the open end - a assemblage." The open end - a court consists of an

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[11] Smith and Clune, cited above, have used five categories only. Smith has not referred to ballcourts in Arizona or in the Antilles. Clune has included the Arizona courts in the Mesoamerican "enclosed type" category, but does not actually classify the typical Antillean court. The classification in this paper recognizes distinguishing features of courts, in Arizona and the Antilles, of sufficient magnitude to extend the categories from five to seven in order to allow for a more extensive examination of courts outside the Mesoamerican region.

[12] A. L. Smith, (1961) op. cit., p. 102.

[13] A. L. Smith, (1955) op. cit., p.3 and (1961) pp. 104-110.

open ended court, one end of which leads into an adjoining plaza which usually has an altar platform in its center (Figure 2.) . The walls vary from about 17 to 26 meters in length and between 2 and 3.5 meters in height.[14]

The courts of this type examined by Smith in Guatemala, with only one exception, had a vertical bench face (Figure 3,e). The angle of the playing walls varied from 45 to 65 degrees. Some of these courts had rooms built on top of the walls. These took the form of long narrow rooms open on the side, which overlooked the playing alley.[15] Stairways situated on the ends and backs of the walls gave access to these buildings.

The third type is an intermediate court,[16] which consists of two main mounds parallel to each other, with low walls enclosing the end courts. It is found throughout Mesoamerica and is a forerunner to the next type of court. The end zones are usually small but well defined by low walls about 0.5 to 2 meters in height. A few of this type have one end wall as high as the playing walls, which are

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[14] A. L. Smith, (1961) op. cit., p. 106

[15] ibid.

[16] So termed by Smith (1955), p. 3., and by Clune (1964), p.12. Smith later, (1961) p. 114, termed this type Enclosed "A".

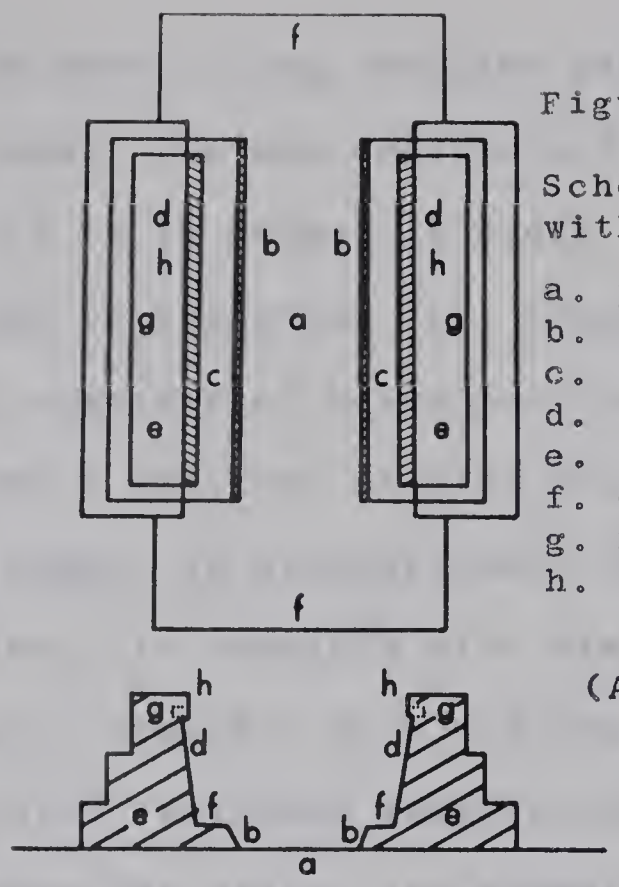


Figure 1.

Schematic ballcourt with nomenclature.

a. playing alley.
b. bench face.
c. bench top.
d. playing wall.
e. range.
f. end zone.
g. mortise.
h. vertical molding of playing wall.

(Adapted from Smith, 1961, p.115).

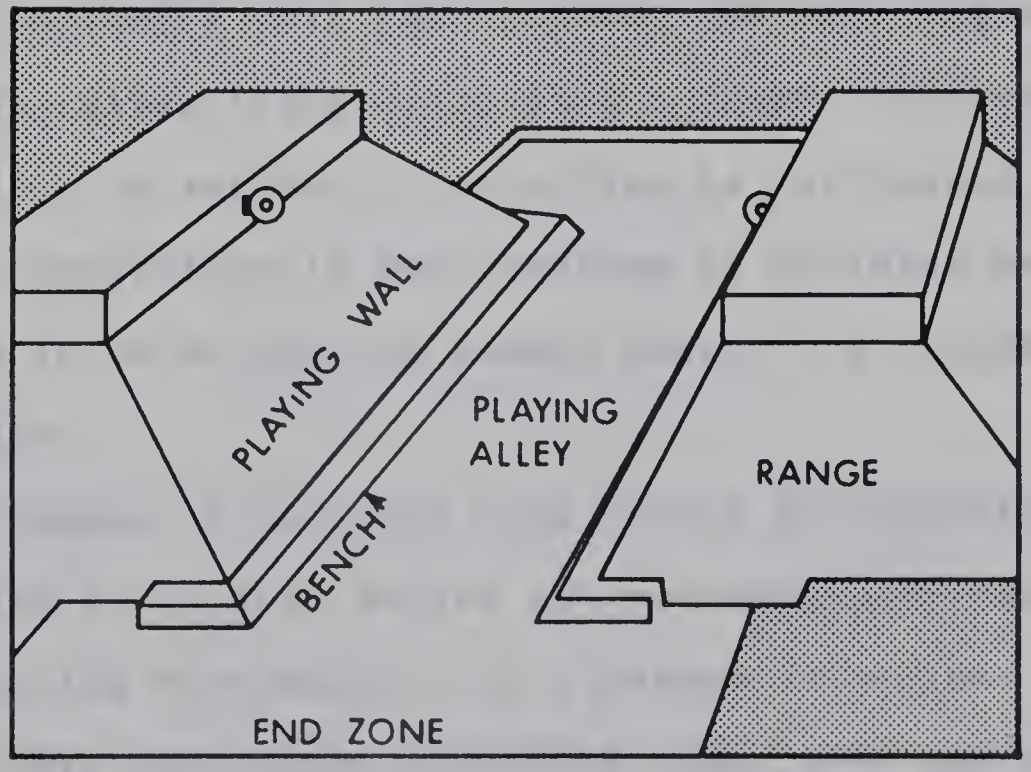


Figure 2. Restoration sketch of a typical Mesoamerican ballcourt of ca. 1200 A.D., showing "I" shaped playing area, sloping walls and stone rings.

(After Borhegyi, 1963, p.1.)





usually from 18 to 36 meters long, and the playing alley from 6 to 9 meters wide. The end zones are from 3 to 8.5 meters in depth and 11 to 19 meters in width, giving the playing area the shape of a capital "I", (Figure 2). The profile (Figure 3,g) consists of a vertical bench face, a sloping bench top, and a vertical playing wall.[17]

The enclosed court, is appropriately named for its method of construction. It consists of a playing area in which the entire court, complete with end zones, has been enclosed by mounds, with stairways leading out at either end. In some instances the stairs are absent, and gaps are left between the mounds. The stereotype of this court produces a rectangle with gaps between the side and end mounds. This gives the playing area a shape which resembles a capital "I". A variety of this type is the sunken court, in which an excavation is made instead of building mounds. There seems to be no obvious reason behind the choice for either version.

The ranges of enclosed type courts are usually from 3 to 5 meters in height; whilst the end walls are usually lower, measuring from about 1 to 2 meters in height. The side walls vary from 20 to 30 meters long, with the playing alley varying from about 6 to 10 meters wide. The end zones show great variation, being from 9 to 19 meters wide and

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[17] Smith, (1961) op. cit., p. 114. See also Figure 7.

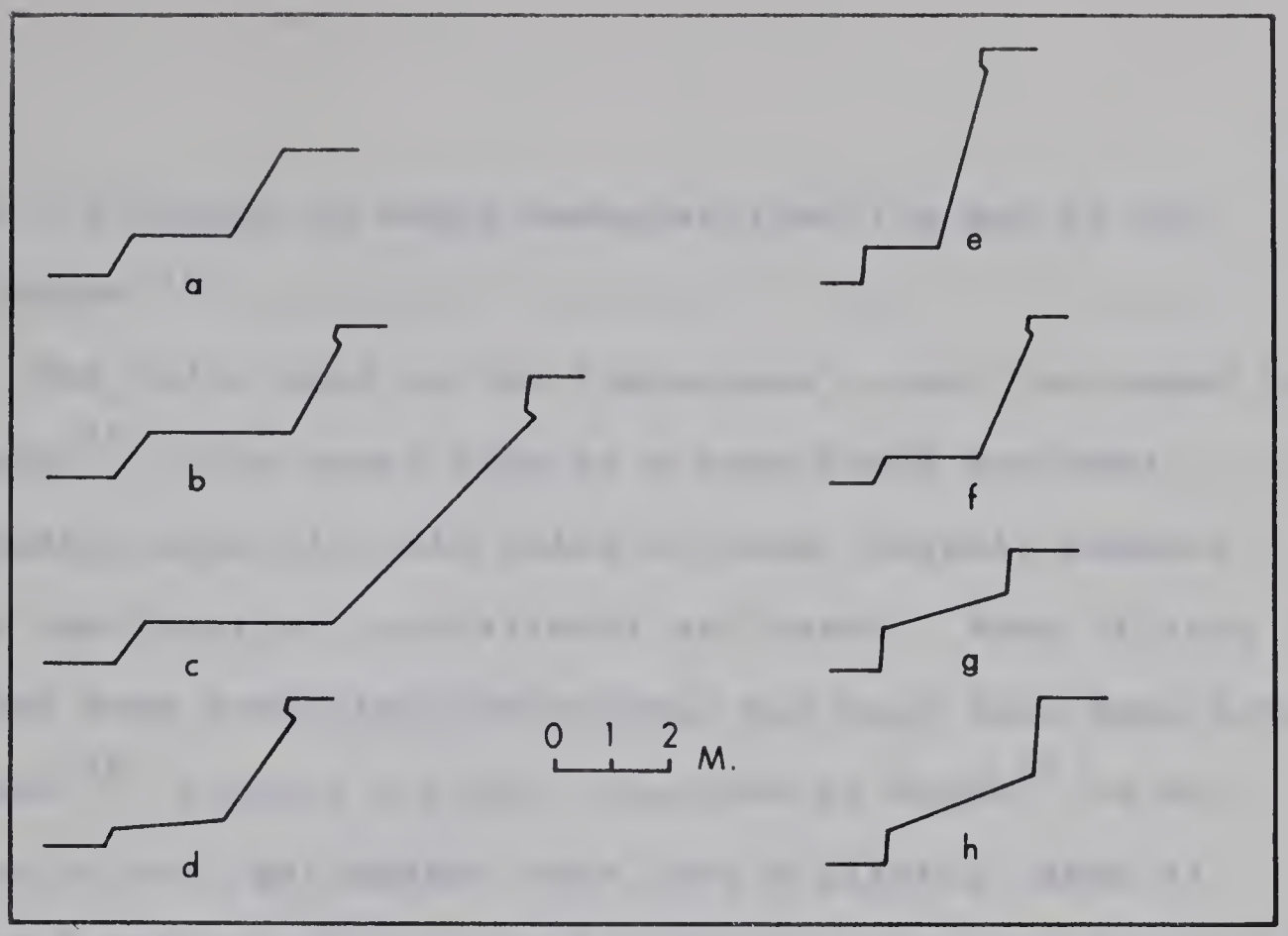


Figure 3. Sections through center of one side of various types of ballcourts. a, Chuchun, open-end type. b, Chichen, open-end type. c, Chalchitan, early phase, open-end type. d, Huil, open-end type. e, Xolchun, enclosed type. f, Chutixiox, enclosed type. g, intermediate type. h, a possible section of a "palangana" type ballcourt. (Adapted from Smith, 1961, p.115).

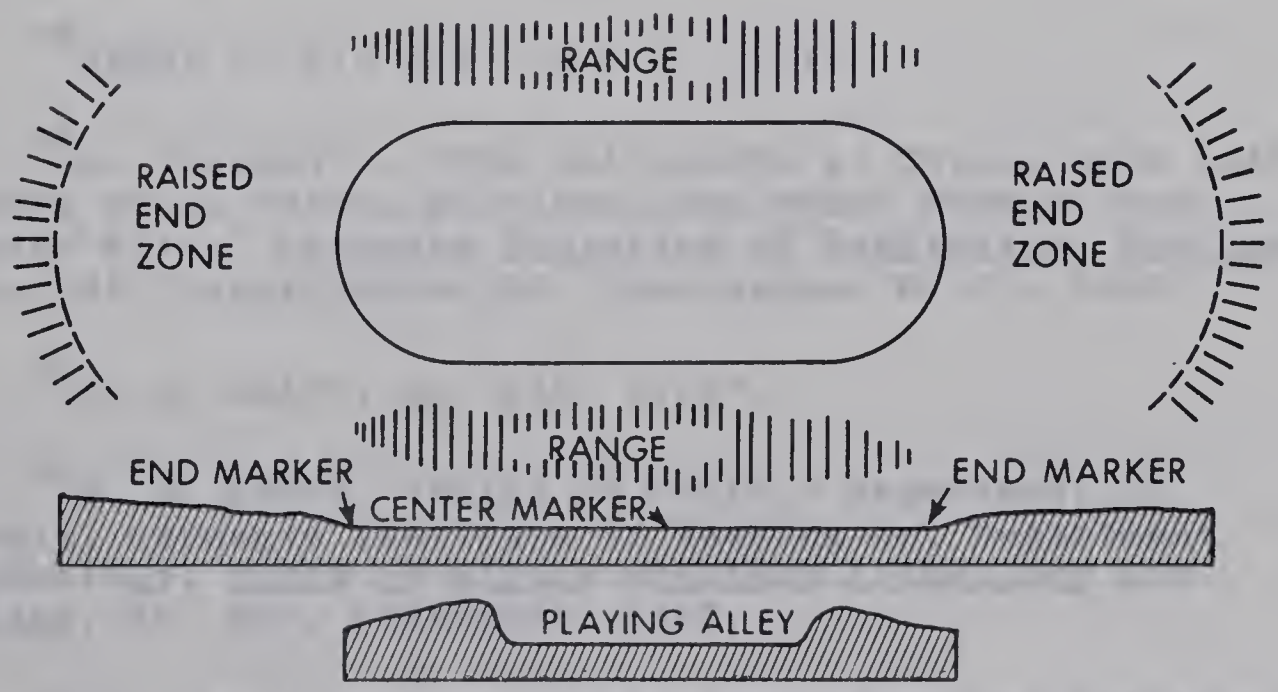


Figure 4. The large ballcourt found at Snaketown, Arizona. The floor of this court, shown by the shaded area, is 56.25 meters long and 18.75 meters wide. It was probably about 5 to 6 meters deep at the time it was in use.

(Adapted from McGregor, 1965, p. 202).





2.5 to 7.5 meters in depth measured from the end of the side ranges.[18]

The fifth type is the "palangana" court, so named by Stomsvik.[19] This court type is a completely enclosed rectangular area with all walls of equal height, benches around the interior, and without end zones. None of this type has been completely excavated; and only four have been trenched.[20] A court a Cotio, reported by Shook[21] to be typical of the "palangana" type, has a playing area of about 9.5 meters wide and 33 meters long with walls 1.5 meters high. An atypical "palangana" type court reported by Lothrop[22] at the site of Arevala, has a playing field measuring 45 by 110 meters. This is the largest ballcourt discovered to date in Mesoamerica,being about twice the size of the Great Ball Court at Chichen Itza.

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[18] ibid, p. 110 and Fig., 6, p.111.

[19] G. Stromsvik, "The ballcourts at Copan; with notes on courts at La Union, Quirigua, San Pedro Penula, and Ascuncion Mita," Carnegie Instution of Washington, Publication No. 596, Contribution 55, Washington, D. C., 1952.

[20] A. L. Smith, op. cit, p.116.

[21] E. M. Shook, "Ruins of Cotio," Department of Guatemala, Carnegie Institute of Washington, Department of Archeology, Notes on Middle American Archeology and Ethnology, No. 107, Cambridge, 1952.

[22] S. K. Lothrop, "Stone sculptures from the Finca Arevala, Guatemala," Museum of the American Indian, Heye

The "palangana" court seems to be limited almost entirely to the highlands of Guatemala, but it is possible that this distribution is the result of a more intensive search of this region, compared with the lowland Maya region, which is most difficult to survey due to the dense rain forest vegetation.

No center line markers, discs or rings have been found in "palangana" courts. As a result, there has been some question as to whether the ball game was actually played in this type of structure.[23] If a ball game was played in these courts then the rules and methods of play were considerably different from other courts. However, there are 52 recorded "palangana" type courts[24] in close association with other types of courts so it is difficult to imagine any other activity but a ball game in their confines.

The next two types of courts occur outside Mesoamerica, namely in Arizona and the Greater Antilles. Although two distinct types of courts have been located in Arizona, one of these, the Snaketown type, has so many similar traits of

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Foundation, Indian Notes and Monographs, No.3, 1926, pp.147-171.

[23] F. J. Clune, op. cit., p. 14.

[24] A. L. Smith, op. cit., p. 117.

the enclosed type courts of Mesoamerica,(Figure 4), that it may be included in that category.[25]

The Casa Grande type court is, in most cases, small in size, usually measuring from about 25 to 30 meters in overall length. The length of the actual playing floor is usually 20 to 22 meters, with about 10 meters between the side walls. They are oval in shape, with small elevated end zones, which in some cases (see Figures 5 and 6), have very narrow entrances from the court proper. The floor is excavated and the walls usually concave. The angle of the walls at the steepest part varies from about 65 degrees to 85 degrees. The walls are made of smoothed clay; and are usually low, varying from 4 to 8 feet in height. Playing floors are cut into the bedrock, and are reasonably level.

Casa Grande courts are concentrated in the Hohokam region of southern Arizona, especially in the Gila basin, (see Maps IXand X , Appendix C). Other courts are found along the Santa Cruz and San Pedro river drainages. A northern extension of the Casa Grande type extends along

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[25]Albert Schroeder, "Cultural Implications of Ball Courts in Arizona," Southwestern Journal of Anthropology, Vol.5:1, 1949. In a recently published article, Schroeder (1966), distinguishes between four different types in Arizona. These are described in the section later in this chapter, dealing specifically with courts in Arizona. For typological purposes for all three areas, only two types show sufficient differentiation for selective purposes. and; H. S. Gladwin, W. Haury, E. B. Sayles, and N. S. Gladwin, "Excavations at Snaketown:Material Culture," Medallion

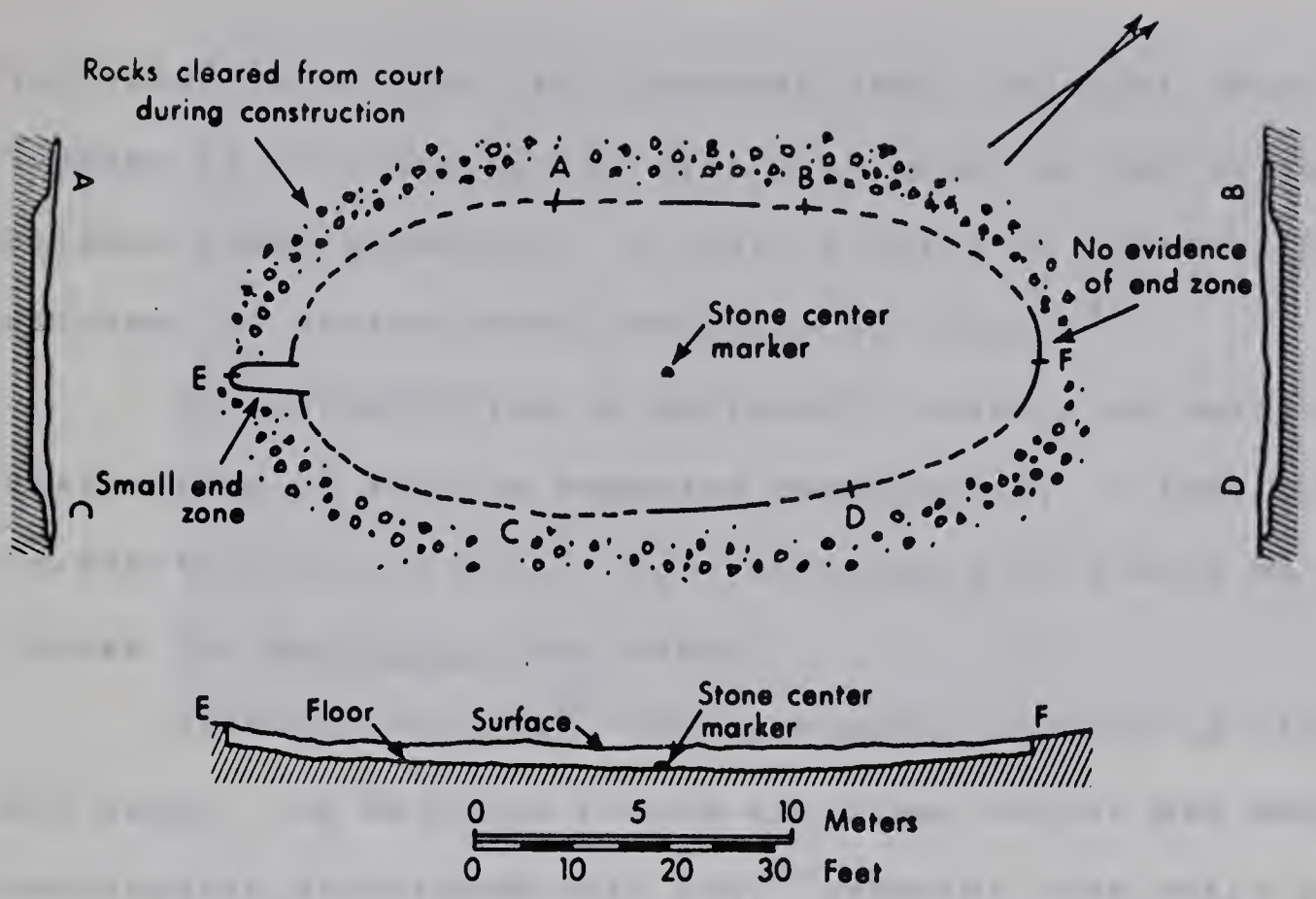


Figure 5. Ballcourt at Stove Canyon site, eastern Arizona. A Casa Grande type court dated between 1000-1150 A.D. It is typically small (23.5 m by 9.7 m) and the only ballcourt located to date in the Mogollon region.

(Adapted from A. E. Johnson, 1961, p. 565.)

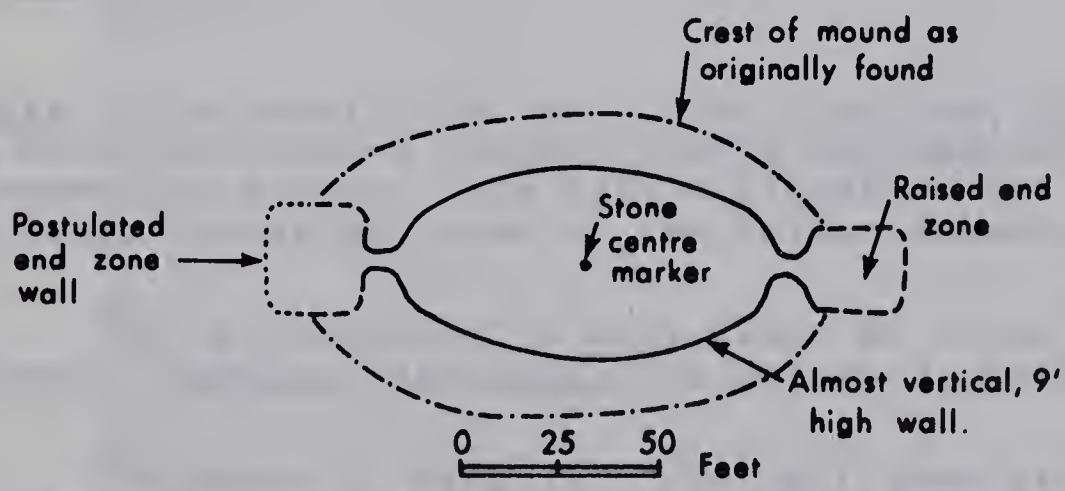


Figure 6. A Casa Grande type ballcourt at Winona Village, Northern Arizona. Possibly one of the earliest Sinagua courts. The court is 94 feet by 48 feet. Playing walls are about 9 feet high, and the end zones are raised.

(After McGregor, 1965, p. 300.)







the Verde River into the Flagstaff area. Several courts are located to the west of the Gila Bend area, as far as the Painted Rocks Reservoir. A court located at Point of Pines defines the eastern most extension of courts.[26]

The seventh type of ballcourt, considered sufficiently distinctive to receive separate description, is that found in Puerto Rico and Haiti. For convenience this will be termed the Antillean type court.

Although reports[27] indicate great variety in size and shape, the majority of the Antillean courts are small, rectangular structures with low,[28] parallel side walls and much lower end walls. The side walls were made of loosely joined rocks incorporated in an earthern mound.[29] Oviedo reported that the spectators sat on the low side walls.[30]

Papers, Gila Pueblo, No. 25, Globe, 1937-42, pp. 36-43. The two above references compare traits of Snaketown type and Mesoamerican courts. The main differences are in size and the large curved end zone of the larger Snaketown court.

[26] A. E. Johnson, "A Ball Court at Point of Pines, Arizona," American Antiquity, Vol.26, No.4, 1961, pp.563-567.

[27] Ricardo E. Alegria, "The ball game played by the aborigines of the Antilles," American Antiquity, Vol.16, No. 4, 1951, pp. 348-352, and; J. A. Mason, "A large archeological cite at Capa, Utuado" in Scientific Survey of Porto Rico and the Virgin Islands, Vol.18,pt.2,New York: New York Academy of Science, 1941.

[28] Stern, op. cit. p. 30, cites Las Casas' estimation of 8-16 inches for the side walls.

[29] ibid. [30] Oviedo, cited by Stern, op.cit.p.30.

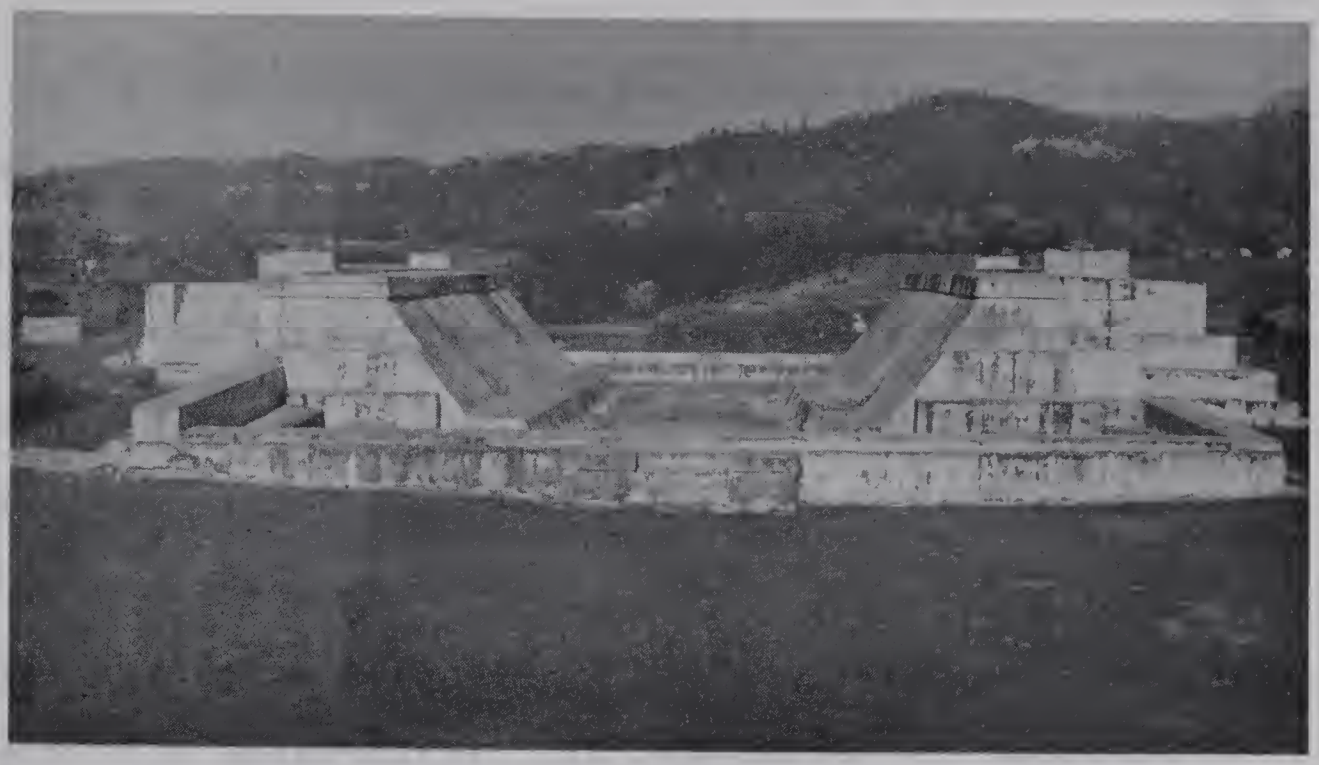


Figure 7. North-south view of the ballcourt at Zaculeu in northwestern Highland Guatemala. Length of court 140 feet, greatest width 70 feet, height of walls 16 feet. An intermediate type court of the Late Postclassic Period (1200-1519 A. D.) (Courtesy of the Milwaukee Public Museum).



Figure 8. Court 1 at Snaketown, Arizona as by Gila Pueblo. Interior length of about 265 feet and interior width of about 57 feet. Originally walls were probably about 12 - 15 feet high. Built 600 - 900 A. D. (Courtesy of the Arizona State Museum).





If this is so, then very little use could have been made of the side-walls in actual play. The functional nature of the structure of courts in the Greater Antilles was certainly unlike that of Mesoamerican courts. In Mesoamerica and probably with some courts in Arizona the use of the side walls was probably an important part of the games, as will be discussed later.

The dating of ball courts, in the areas treated here, is fraught with uncertainty. In his survey of highland Guatemala, Smith [31] attempted to date both ballcourt and site, utilizing surface ceramics and some excavated ceramics. In most other surveys, the site is dated, and then if a ballcourt is present it is deemed to have a construction date corresponding to that of the site. However, as Clune[32] cogently points out," many important sites span a great number of years and cover two or more time periods." Actual excavation of ballcourts is the only sure method of obtaining accurate dating, but this work has seldom been undertaken. Clune admits that, in his classification of 267 Mesoamerican ballcourts, about two thirds of these have been given approximate dates. A great deal more excavation and analysis of Arizona and Antillean ballcourts is needed before even a modest classification, including

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[31] Smith,(1961) op. cit., pp.100ff. [32] Clune,op.cit.,p.16.

dating, can be attempted.

Present knowledge places the court at Monte Alban as the earliest known ballcourt. This court was built during the Late Preclassic period. somewhere between A. D. 1 and A. D. 300.[33]

The first court at Copan has been dated with a second phase of the same court at ca.435 A. D. in the GMT. correlation, with a second phase of the same court at ca.514 A. D.[34] This information then gives Oaxaca the first dated ballcourt and the Lowland Maya area the second.[35]

In the Late Classic period, ballcourts are found widespread in Mesoamerica, with the exception of the Valley of Mexico, (See Map IV, Appendix C). This distribution may be due to the lack of excavation, or because none were built until the Late Postclassic period.[36]

A peculiar circumstance, discussed later in this paper, and as yet unanswered, is the failure of the Mayans to duplicate the presumably earlier ballcourt type of Monte Alban. Monte Alban is an enclosed type, while most Mayan courts are open-ended. Excepting the court at Copan,

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[33]Personal communication with Acosta, cited by Clune op. cit., p. 19.

[34]Stromsvik, loc. cit., [35]See map III in Appendix C.

[36]the latter possibility is postulated by this writer.

Mayan courts seem to be simplified copies of the Monte Alban structure in the same way that the Snaketown type courts in Arizona seem to be simplified copies of the typical ballcourt of the Early Postclassic period of Mesoamerica.

Highland Guatemala Courts

The ballcourt sequence in the highlands of Guatemala includes all of the first five types. The time span of the sequence begins in the Classic period and extends to the Conquest. In the Classic period the angle of the playing walls was very shallow, ranging between 50 and 60 degrees. At the time of the Conquest the walls were almost vertical.[37]

Throughout all time periods, the standard center-line marker is a tenoned stone head at the junction between the sloping playing walls and the vertical overhanging wall-top surface or slab, (See Figure I,h). The use of rings, in this area,is not evident.

The enclosed type of ballcourt at Monte Alban appeared some 1,200 years before the same type appeared in highland Guatemala.[38] This dating indicates that the enclosed type of court was originally a Mexican invention. Its diffusion into the Guatemalan area probably occurred during the Late Postclassic period.

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[37] Smith,(1955) op. cit., p.72. [38] ibid, pp.81-82.

The association between ballcourts and ceremonial structures is particularly strong in this area. All courts have altars and shrines as well as other evidence of religious association. This correlation does not mean that a secular function of the game did not exist, but that this was certainly not the sole function.

Lowland Maya Ballcourts

As mentioned earlier, the court at Copan is the earliest dated ballcourt in this area. Stromsvik[39] dated this at ca.435 A. D. However, some sites containing ballcourts have been dated at ca.320 A. D., but the date of actual ballcourt construction is uncertain.[40] A later court at Copan has a date of ca.652 A. D.; and it seems that no courts were built between 435 A. D. and 652 A. D.[41]

The areas surrounding Copan all have courts similar to the Copan court.[42] However, the influences that produced the Copan court did not affect other sites until well into the Late Classic period; that is, there was a delay of about 100 to 150 years.[43]

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[39] Stromsvik, loc.cit.

[40] Clune, op. cit., p.28.

[41] ibid, p. 29.

[42] Stromsvik, loc.cit.

[43] Clune, op. cit., p. 30.

All of these Late Classic courts are open-ended except for one at Asuncion Mita, which is an intermediate type. The intermediate type court is also present in the Maya area, particularly in the lowlands. It is almost certain that this type was preceded by the open-ended type throughout the area.[44]

The court with vertical walls and rings was originally thought to be a rather early type in the lowland area. A Court at Uxmal has recently been partially excavated and dated at 649 A.D. This court has rings, vertical walls and is open-ended.[45] The use of rings first appears at the site of Coba. Two of the three courts at this site have rings which are quite large, the internal diameter being about 50 cm.[46] If, as is reported from Conquest times, the ball was only slightly smaller than the hole in the ring, then the ball would be about three

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[44] Clune, op. cit., p.31.

[45] Ruz Lhuiller, "El Juego de Pelota de Uxmal," Miscellanea Paul Rivet Octogenario Decata. 31st International Congress of the Americanists, Vol. 1, pp. 635-667, Mexico, D. F. 1958, cited by Clune, op. cit., p. 31.

[46] J. E. S. Thompson, H. E. D. Pollock and J. Charlot. "A Preliminary Study of the Ruins of Coba, Quintana Roo, Mexico," Carnegie Institution of Washington, Publication No. 424, Washington D. C., 1932, pp. 48f., figs, 18, 19; plate 16.

times larger than the ball reported by Kelly[47] to have been used on the west coast. The aperture of the rings at Coba can probably be assumed to be considerably larger than the ball, and, as Clune[48] suggests, the smaller size of rings from other areas may have been an attempt to make the scoring method more difficult.

In the lowland Maya area the general tendency was for the early ballcourts to be of the small, open-ended type. Later, this gave way to the enclosed or intermediate type. Some sites, however, even in areas strongly influenced by other Early Postclassic architectural features, retained open-ended courts. This is illustrated at Chichen Itza, where the Holtun court is from the Early Postclassic period, but is open-ended; while the Great Ballcourt, of the same period, is of the enclosed type.[49]

Although the ball game was being played in the Maya area at the time of the conquest it must have been confined to the highland areas. No Late Postclassic sites with ballcourts have yet been discovered in Peten or Yucatan.

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[47] Isabel Kelly,"Notes on a West Coast survival of the ancient Mexican ball game," Carnegie Institution of Washington, Division of Historical Research, Notes on Middle American Archeology and Ethnology, Vol.1, No. 26, Washington D. C., 1943, pp. 163-175.

[48] Clune, op. cit., p. 32

[49] ibid, pp. 33, 214.

So far, no ballcourt has been found at Mayapan, (which was occupied up until 1440 A. D.) or at Tulum. However, Sanders[50] claims the probable existence of a ballcourt at Tulum; this has yet to be verified. No Conquest period site has a ballcourt.[51]

The dearth of later period ballcourts parallels the reduced architecture following the collapse of the Classic Maya civilisation. The reduction of population and building, resulting from disputes between Chichen Itza and the League of Mayapan during the second empire period, must also have been responsible for a reduction in the number of courts. The Spanish invasion and the consequent destruction of sacred places, together with a general disintegration in the Yucatan area, must have further reduced the number of courts in post-Conquest years.

The Valley of Mexico and Surrounding Areas

All of the Spanish chroniclers mention the ball game.

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[50] W. T. Sanders, "Prehistoric Ceramics and Settlement Patterns in Quintana Roo, Mexico," Contributions to American Archeology and History, No.60, Carnegie Institute of Washington, Publication No. 606, Washington D. C., 1960, p. 155.

[51] Ralph L. Roys, "Conquest sites and the subsequent destruction of Maya architecture in the interior of northern Yucatan," Contributions to American Anthropology and History, Vol.XI, Nos. 2-56,Carnegie Institute of Washington, Publication No.596, Washington, D. C., 1952,pp.129-182.

Their reports and the evidence collected by Stern[52] indicate that the game was played throughout the so-called Aztec Empire. However, archeological evidence of ballcourts in this area is extremely meagre. Tula and Xochicalco are the only sites in the Valley of Mexico which have excavated ballcourts. Another possible open-end court has been located at Xtapaluca, Viejo.[53] A court has been found in southern Tamaulipas which has a C-14 date of 610 A. D. plus or minus 105.[54] This means that the earliest dated court, yet found in this area is outside the actual Valley of Mexico. Only two courts, of unknown date, have been found in Central Mexico. These are at Manzanilla near the city of Puebla.[55] Presumably because of religous conflict, the Spaniards destroyed temples and ballcourts soon after conquering an area. The game was literally outlawed. The destruction of ballcourts[56] erased all evidence of their reported wide distribution during the Late Postclassic period. It seems very unlikely, if the number of courts was very large, that the Spaniards could have destroyed all. Furthermore, some courts had been built in

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[52]Stern, op. cit.,pp. 51-56 [53]Clune, op.cit.,p 36.

[54]ibid. [55]Personal communciation from R. Gruhn.

[56]Roys, op. cit., p. 180

earlier times, it is likely that some would have been in a disused state at conquest time and would be undisturbed by the Spaniards. Despite this hypothesis no such remains have been found. The available evidence, then, supports the theory that the ballcourt was not introduced into the Valley of Mexico until the Postclassic Period. Clune[57] suggests that the game was brought in from either Monte Alban or the west coast area around Nayarit. To date there is no evidence to support this speculation.

The description of courts by Motolina, Duran, Gomara and Sahagun[58] generally fit the restoration sketch (Figure 2, p.27). The considerable variation in dimensions reported by the above-mentioned eyewitnesses seems to be confirmed by the limited archeological evidence available.[59] For instance, the length of courts ranges from 97 feet to 226 feet and widths from 12 to 41 feet. There is a general agreement on height of the side walls, namely, between about 8 feet and 11 feet.[60]

The chroniclers are unanimous in reporting paired stone rings set on tenons into the side walls at court

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[57] Clune, op. cit., p. 37.

[58] All cited in summary by Stern, op. cit.,pp. 52-56.

[59] Mainly evidence from southern and northern Mexico, outside the actual Valley of Mexico.

[60] Converted from estados - 1 estado = ca. 5.5feet See Stern, op. cit., p. 53.

center and about 8 feet above the court floor. Archeological evidence for southern Mexico indicates that rings were not present.[61] In their stead, tenons high in the centre of the side walls are usually found. Caso[62] suggests that these were used to house images of patron gods or for playing equipment.

Lack of archeological evidence and conflicting reports in the codices limits our knowledge of markings on the playing floor of the courts in this area. Stern's[63] research of the codices reveals that the only markers present are lines traced upon the ground along the major and minor axes of the court; thus dividing it into four equal parts. According to Duran,[64] the shorter, transverse line was drawn in black or green with a dye from a special herb, from points immediately below each ring. Neither he, nor any other chronicler, mentions the longer line. The codices, on the other hand,quite frequently show it, as well as the transverse line. The available evidence is

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[61] Acosta, op. cit., p.239f.

[62] A. Caso, "Las Exploraciones en Monte Alban Temporada 1-34-1-35." Instituto panamericano de Geographie e Historia. Mexico:Publication No. 19, 1935, p.12, cited by Stern, op. cit., p.53.

[63] Stern, op. cit.,pp. 54-55

[64] Duran, op. cit., in Blom, op. cit. p.513.

too meagre to allow even timid speculation on the function of the quartered court in playing the game. Perhaps it could by inferred, however, that there was more than one system of court marking and that different types of rubber ball games were played according to these markings.

Northern and Western Mexico

A glance at Maps III-VII, in Appendix C, reveals that ballcourts extend up the tierra caliente of either coast and in the flanking Sierras. To date, evidence of courts on the arid interior plateau is meagre.

Stern[65] thoroughly researched the material available for the northern area and concluded:

> Taken together, the northern Mexican versions of the game reveal positive differences from their central Mexican counterpart. The court, where it exists, is less complex, lacking such features as bench, end walls, and rings.[66]

More recently, Lister (1955)[67] has completed a comprehensive summary of ballcourts in the western area. He concludes that :

> Ballcourts are said to have been located at Jiquilpan, Michoacan, the Middle Rio Balsas and the

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[65] Stern, op. cit., pp. 76-88 [66] ibid, p. 87.

[67] R. H. Lister, "The present Status of the Archeology of Western Mexico," University of Colorado Studies Series in Anthropology, No. 5, University of Colorado Press, Boulder, 1955, Map 59, p. 49.

> Costa Grande of Guerrero, and in southern Durango. Most identifications are based on surface indication or upon the findings of stone rings. Their greatest distribution would appear to be in Guerrero, where courts as well as stone rings are encountered. Since the Guerrero courts have not been tested, they cannot be identified as to type.[68]

Although many reports of the probable existence of ballcourts in this area have been made,[69] archeological evidence to support these claims is unavailable. The most likely explanation of the void between Central Mexico and Arizona is given by Schroeder,[70] who suggests that certain specialized requirements may have been lacking in the intervening area of northern Mexico. He says:

> Concentrations of sedentary cultures with a complex ceremonial organization, which may have existed in Middle America and in the Hohokam area of Southern Arizona prior to A. D. 900 but were lacking throughout northern Mexico at this same time, may have been the factor that determined the presence or absence of ballcourts.[71]

Ballcourts in Arizona

The distribution of ballcourts in this area has already been mentioned (see Maps IX and X, Appendix C).

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[68] *ibid*, p.49. [69] cf. Clune, *op. cit.*, pp. 38-39.

[70] Albert H. Schroeder,"Ball courts and Ball Games of Middle America and Arizona," *Archeology*, Vol. 8, No.3, Brattlebro, 1955, p. 161.

[71] *ibid*.

The report of a possible court in Hidalgo County in New Mexico may be the first southwestern court located outside Arizona.[72] This wide distribution of ballcourts involves the Hohokam, Mogollon and Sinagua cultures but at different times and with different types of ballcourts.

Since the pioneer work of Gladwin and others[73] in the 1930's it has been customary to classify all ballcourts in Arizona either as "Snaketown" or "Casa Grande" types. The primary criterion for this classification is size.

In 1963, and more recently, Schroeder[74] has published data providing additional criteria, enabling a distinction to be made between four different types. The criteria, in addition to size, included date, orientation, cultural affiliation and settlement pattern. The types additional to those mentioned above are "Ranch Creek" and "Tres Almos". As can be seen in Table IV, Schroeder has given major consideration to chronology and orientation.

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[72] Roger Kelly, op. cit., p. 87.

[73] H. S. Gladwin, E. W. Haury, E. B. Sayles and N. S. Gladwin, "Excavations at Snaketown:Material Culture." Medallion Papers, Gila Pueblo, No. 25, Globe, 1937.

[74] Albert H. Schroeder, "Diffusion North out of South-central Arizona." El Palacio, Vol.70, Nos.1-2, Santa Fe,1963, pp. 13-24, and; "Pattern Diffusion from Mexico into the Southwest After A. D. 600." American Antiquity, Vol.31, No. 5, 1966, pp. 683-704.

TABLE IV

TENTATIVE CRITERIA FOR BALL COURT TYPES[75]

Traits	Ballcourt Types			
	Ranch Creek	Snaketown	Tres Alamos	Casa Grande
Phase	Gila Butte to Sacaton	late Gila Butte to Sacaton	late Santa Cruz to early Sacaton	Sacaton
Estimated Dates	A. D. 600-1000	A. D. 700-1000	A. D. 900 1000	A. D. 950-1150
Orientation	111° to 130° E of N (S.E.)	105° to 111° E of N (E.S.E.)	24° W of N to 4° E of N (N)	28° W of N to 15° E of N (N) [76]
Culture Pattern	Hohokam	Hohokam	Non-Hohokam	Hohokam and other
Occurrence	in few communities	in few communities	in few communities	in most communities
Court Width	up to ca. 40 ft.	about 60 ft.	44 to 68 ft.	33 to 57 ft.
Cultural Derivation	"Tarascan"	"Nayarit"	"Chalchihuites"	local adaptation of Chalchihuites

[75] Adapted from A. H. Schroeder (1966:691) and W. W. Wasley and A. E. Johnson (1965: 83).

[76] A court excavated at Point of Pines is an exception being 44° E. of N. This is in a Mogollon area. A. E. Johnson, op. cit., (1961:565)

The Ranch Creek type ballcourts of the Gila Butte phase seem to be the earliest ballcourt structures in Arizona.[77] One is located at Ranch Creek, southeast of Globe.[78] Another built in the Gila Butte period is in the Gila Bend region,[79](See Figure 9). A recently discovered example occurs near Humboldt.[80] These Ranch Creek type courts differ from the Casa Grande type, which was described earlier in this chapter, in that they are narrower in their oval plan and are oriented off the cardinal points of the compass. All but one[81] of these examined to date, are oriented to the southeast between 111 and 130 degrees to the east of true north. In contrast to the large number of Casa Grande types of the Sacaton phase, these earliest courts are found in only a few of the contemporary Hohokam sites of the Colonial period.[82]

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[77]Schroeder (1963), op. cit., pp. 13ff.

[78]Raymond Brandes,"An Early Ball court near Globe, Arizona," The Kiva, Vol.23, No. 1. Tucson, 1957, pp.10-11.

[79]Wasley and Johnson(1965) op. cit.

[80]Schroeder (1966) op. cit., p. 690.

[81]Schroeder (1960) op. cit., p. 690, cites an exception, namely the court cited by Wasley and Johnson (1965) which is the only Arizona court with rock embankments and is oriented 44 degrees to the east of north.

[82]ibid.



Figure 9. Excavated ballcourt near Tucson, Arizona. T : 13 : 9 (Rock Ball Court Site). Ranch Creek type (600 - 700 A.D.) (Courtesy Arizona State Museum).



Figure 10. Restored ballcourt on the Gila River southwest of Phoenix, Arizona U : 9 : 1 (Puebla Grande). Casa Grande type (1100 - 1150 A.D.) (Courtesy Arizona State Museum).





The small Ranch Creek court was soon accompanied, but evidently not superseded, by another, the large Snaketown type court. It first appeared in the late Gila Butte phase.[83] It differed from the earlier court, being much larger overall, and with a different form of end unit (See Figures4, and 8). It is also oriented in a more general east-west direction (Table IV); and instead of being oval in shape like the other three types, it has a modified capital "I" shape. Schroeder[84] points out many similarities between the Snaketown court and Mesoamerican courts. More recently[85] he suggests that the idea for this court type diffused from coastal Nayarit, where a similar type of court has been excavated at the Amapa site.[86]

The Tres Alamos courts are few in number. They preceded the Casa Grande type of court, first appearing in the late Santa Cruz phase. They are larger than the

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[83]Gladwin, et. al; op. cit., p. 41.

[84]A. H. Schroeder, "Cultural Implications of the Ball Courts in Arizona," Southwestern Journal of Anthropology, Vol.5, 1949, Tables 1 and 2, pp. 28-36.

[85]Schroeder (1966) op. cit., p. 694.

[86]Clement W. Meighan, "New Findings in West Mexican Archeology," The Kiva, Vol. 25, No. 1, Tucson, 1959, pp. 1-7, and; Clune, op. cit., pp. 75-81.

later, Sacaton phase, Casa Grande courts which appear to be local adaptations of the Tres Alamos courts. The latter, according to Schroeder, were derived from the Chalchihuites culture,[87] (See Figure 10).

The available evidence suggests that the construction of ballcourts in Arizona, stimulated by Mesoamerican contact, began early in the Gila Butte phase (600-900 A.D.).[88] Small Casa Grande type courts were constructed in the Gila-Salt basin. During the later years of the Gila Butte phase the large Snaketown type courts were built by the Hohokam. The peak of ballcourt construction seems to have been around 1000 A.D., when the Hohokam culture had achieved wide distribution and was enjoying a relatively prosperous period.

In the Gila Butte and Santa Cruz phases, small and large Snaketown type courts were built in the Gila-Salt Basin and in the Globe, Tucson and Gila Bend areas. Later, in the Sedentary phase, small Snaketown and variable sized Casa Grande type courts extended into southeast Arizona.

During the Sedentary phase of the Hohokam, the Snaketown type courts became obsolete and the Casa Grande type spread from the Gila-Salt Basin northward to the Flagstaff area and later as far north as the Wupatki

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[87] Schroeder, (1966) op. cit., p. 691, Table XII.

[88] Schroeder, (1955) op. cit., p. 159.

National Monument. It appears that the northern extension of ballcourts, into the Sinagua culture, was the latest; and courts were probably in use in this region after the ball game was discontinued by Hohokam.[89]

It appears as if the concept of ballcourts was introduced to the Sinagua and Mogollon cultures by direct settlement of the Hohokam in northern and southeastern Arizona.[90]

While Mesoamerican ballcourts are usually associated with a ceremonial centre, ballcourts in Arizona are generally on the outskirts of settlements. There seems to have been little relationship between ballcourt structures and specific ceremonial structures.[91] Kelly states that "not all villages had ballcourts; but when courts were associated with larger multi-family settlements, they were located in peripheral places to the living and working areas."[92]

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[89] Roger Kelly, op. cit., p. 93.

[90] John, C. McGregor, "Winona and Ridge Ruin, Part 1," Museum of Northern Arizona, Bulletin No. 18, Flagstaff, 1941, p. 281, and; David A. Breternitz, "Excavations of Three Sites in the Verde Valley, Arizona." Museum of Northern Arizona, Bulletin No. 34, Flagstaff, 1960, p. 27, and; Roger Kelly, op. cit., p. 93-94.

[91] Specific ceremonial structures were rare amongst the Hohokam(Personal communication from R. Gruhn).

[92] Roger Kelly, op. cit., p. 68.

Compared with their complex canal building, ballcourt construction would have posed no problem to the Hohokam. Kelly has calculated that a small Casa Grande type court could have been built by a dozen Hohokam workmen in approximately two weeks.[93] Even the larger Snaketown type was probably built in eight to ten weeks by a larger work force. Excavation reports indicate that signs of maintenance are usually present. As caliche plaster was the binding material used for the walls, repairs would certainly be needed after prolonged or heavy rain; otherwise the walls would have been quickly eroded.

Ballcourts must have played a very important role in Hohokam culture. At a later date this must also have been so in sub-areas of Sinagua and Mogollon cultures. This is evident from the fact that ninety courts have been found to date,(See Maps 9-10, Appendix C). Many have probably been changed by the elements beyond recognition.

Whilst ballcourts in Arizona are architecturally different in gross characteristics from those of Mesoamerica, there are certain characteristics which seem beyond mere coincidence. Such features are the specific number and placement of markers on the playing floor and the plastering of the inside surfaces of the playing walls.

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[93] ibid, p. 69-70.

The major difference between Mesoamerican and Arizona courts is not in architectural features but in cultural role. In contrast to Mesoamerica, the courts of Arizona do not play a central role in the settlement complex; and with only two exceptions,[94] are not located near other socio-religious structures.

Ballcourts in the Greater Antilles

The concept of the ballcourt probably diffused from Mesoamerica to the Greater Antilles by a direct sea route.[95] Originality of its invention in the Antilles is commonly negated.[96] The Taino culture, of Arawak linguistic stock, with its nucleus of organisation on the Island of Puerto Rico, began to build courts in Period IIIb (A. D. 1317-1437)[97]

Archeological evidence suggests that most of the

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[94]The Gatlin site and Wupatki Ruin in Wupatki National Monument are cited as possible exceptions by R. Kelly op. cit., p. 67.

[95]This diffusion is discussed at greater length in Chapter V, p. 141.

[96]Charlotte D. Gower, "The Northern and Southern Affiliations of Antillean Culture," Memoirs of the American Anthropological Association, No. 35, 1927, p.46.

[97]Irving Rouse, "The Circum-Caribbean Theory, An Archeological Test," American Anthropologist, Vol. 55, p. 197.

courts were constructed inland.[98] There seems to be a relationship between court construction and a change-over from a predominantly fishing subsistence to a sedentary, agricultural economy.[99]

According to ethnohistorical evidence,[100] the principal ballcourt was situated in the central plaza of the small settlements. Larger towns had other courts, usually of smaller size. The account given by Las Casas indicates that the courts were rectangular in shape, with a length-width ratio of 3:1. The playing floor was simply a cleanly swept earthen area surrounded by low walls of from 8 to 16 inches in height. Stones were incorporated in the earthern mounds, and it is believed that the spectators sat upon these stones.

Ballcourts have been reported for Puerto Rico, Haiti and the Virgin Islands.[101] However, the only detailed

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[98] This may not be the case, however. As Alegria(1951) op. cit., p. 349, points out, at contact time most of the important Taino settlements of Puerto Rico were along the coastal belt. Modern, intensive cultivation of sugar cane along the coastal belt may have destroyed all evidence of the simply constructed courts, whereas the remains of inland courts have not been subject to such intensive cultivation.

[99] This supports the claim made in Chapter 1,p.12-15, concerning relations between culture and the competitive ball game.

[100] Las Casas, op. cit., cited in Stern, op. cit., p. 30, and; Oviedo, op. cit., cited in Stern,op. cit., p.30.

[101] Wendell C. Bennett, "Religious Structures," Handbook

archeological reports available for the Greater Antilles are for Puerto Rico.[102]

Puerto Rican ballcourts excavated by Mason[103] possess only low side walls and vary in size, ranging from 62 feet by 27 feet to 200 feet by 55 feet.

In Puerto Rico, ballcourts have been discovered in the environs of Utuado, Lares, Adjuntas, Barranquitas, Orocovis and Jayuya. The Utuado site is the only one for which details are available.[104] Here there is evidence of the existence of twenty-four courts, varying in size and state of preservation.

In one small area of this site, which seems to indicate a small Arawak village of the Taino phase, there are ten ballcourts. One of these is a large central court measuring 160 feet by 130 feet. There are eight smaller rectangular courts and one which is circular.

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of South American Indians, Julian H. Steward (Ed), Smithsonian Institution, Bureau of American Ethnology, Bulletin Vol. V, p. 31.

[102] J. A. Mason, "A large archeological site at Capa Utuado, etc. . . " in Scientific Survey of Porto Rico and the Virgin Islands, Vol.18, Part 2, New York: New York Academy of Sciences, 1941, p. 247-254.

[103] ibid. pp. 247-254 and 262-263.

[104] Ricardo E. Alegria, "The Ball Game Played by the Aborigines of the Antilles, "American Antiquity, Vol. XVI, No. 4, 1951, pp. 348-350.

Alegria describes the larger court:

> The longer sides, which run from north to south are marked by lines of great stone blocks or monoliths, some of which are more than six feet high and must weigh more than a ton. The manner in which these great stones have been planted vertically in the earth to form an enclosure of such size is remarkable. If we consider their weight and the fact that it was necessary to bring them to their present position from a river-bed several hundred meters away, we may appreciate the importance and the significance of this work of primitive engineering. The two shorter sides (end walls) [105] of the rectangle consist of two paths formed of smaller stones set in regular order. Many of the great stones of the longer sides still show faint traces of the carvings which they once bore.[106]

This is the only court with high side walls reported to date. It seems that the majority of small courts had low side walls which not only provided a boundary, but also seating space for spectators. The low end walls were probably goal lines.[107]

From the limited information available, it would appear that with the exception of the large court at Utuado, Antillean courts were very simple structures in which a simplified version of the Mesoamerican type of game was played.

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[105] The square brackets have been added by the present writer

[106] Alegria, op. cit., p. 349

[107] Stern, op. cit., p. 32. footnote 7.

Summary

Several attempts have been made to classify ballcourt structures in Mesoamerica and Arizona.

Ballcourts in the Antilles have not,as yet, been fully listed nor classified according to type.

Clune has listed and classified 196 Mesoamerican ballcourt sites, containing 267 ballcourts; Kelly has completed the first classification of 87 ballcourts in Arizona, based on two main court types. Schroeder recognises four distinct types in Arizona. This study has revised the inventories of Clune and Kelly,(See Appendix B, I-II).

Evidence for the diffusion of ballcourt traits, probably from Mesoamerica to Arizona and the Greater Antilles, gives sufficient licence for the establishment of a classification incorporating court types from all three areas. This results in a classification which recognizes seven main ballcourt types.

Present knowledge indicates that the enclosed type court at Monte Alban was the first structural ballcourt. This court was constructed some time between A. D. 1 and A. D. 300. Courts were built in most areas of Mesoamerica up to and during the Late Postclassic period, except in the lowland Maya area, where no ballcourts seem to have been constructed during that period.

In Arizona ballcourt construction began in ca.600 A. D. and had ceased by ca. 1150 A. D.

Ballcourts in the Greater Antilles were a much later innovation. Present evidence indicates the beginning of construction in ca.1300 A. D. The Spanish destruction of the Taino culture in the 16th Century brought an end to court construction.

Most Mesoamerican courts are closely associated with ceremonial structures, which indicates a close relationship between the ball games played within these structures and religion. However, the greatly increased number of courts built in the Early and Late Postclassic periods may indicate a more secular trend.

Siting of ballcourts in the Antilles within the ceremonial center of the village indicates a religious association. However, descriptions of the game which follow in the next chapter also indicate a secular function.

Ballcourts in Arizona probably diffused directly from Mesoamerica. Siting of courts on the peripheries of villages and the relatively simple structural design indicates more of a secular, recreational function.

Ballcourts in all three areas exhibit a great variety of structural characteristics. This variation has been influenced by both temporal and areal factors. One extreme is represented by the simple Antillean court. This has very low side walls and no end walls. The elaborate

Early Postclassic Mayan enclosed type courts with high vertical side and end walls together with fixed stone rings, represents the other extreme.

The variety of structural ballcourt types suggests a wide variety of rubber ball games, over space and time.

CHAPTER IV

PLAYING METHODS AND FUNCTION OF THE GAME

The previous chapter has attempted to collate the available archeological and historical evidence on ballcourt types and their distribution. The limited historical evidence describes the type of game played on only a few of the hundreds of courts which existed both in space and time throughout Mesoamerica. The archeological evidence is much more extensive than the historical evidence; perhaps it is even more valid. However, from the archeological evidence gathered from outside those areas for which we have written historical evidence, it may be assumed very confidently, that the courts were used for playing a ball game. The question becomes, what kind of ball game?

There is a tendency by most authors to assume that the Mayan, and Aztec versions of the ball game may be considered as the model throughout Mesoamerica. Even if it was certain that all ballcourts were used for a ball game involving the use of a rubber ball, there is still need for caution in making generalisations. There are many types of games which can be played with a rubber ball.

It seems that as ballcourts exhibit similarities and dissimilarities over space and time, so too did the games played within their confines. No general description of a competitive rubber ball game throughout Mesoamerica can

therefore have much meaning. Such an attempt could be likened to attempting a general description of "football" in Australia where four different, popular games are played on "football" fields which are similar in shape and size.

An area by area description within the limitations imposed by availability of evidence will be attempted. The descriptions rely heavily upon the work done by Stern (1950),[1] Blom(1932),[2] Thompson(1941)[3] and Kelly(1943),[4] all of whom have thoroughly researched and collated historical writings of both primary and secondary sources.

At the expense of repetition it is necessary, in several instances, to describe again certain court dimensions and markings. Wherever possible the reader will be referred back to the relevant section of the previous chapter.

The Games in the Antilles

Competitive rubber gall games are reported from the

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[1]Theodore Stern, "The Rubber Ball Games of the Americas," Ethnological Society Monographs, No. XVII, (New York: J. Augustin, 1950).

[2]Frans Blom, "The Maya Ball Game Pok-ta-Pok (called tlachtli by the Aztecs)," Middle American Research Series, No. 4,(New Orleans:Tulane University, 1932), p. 487-527.

[3]J.E . S. Thompson, "Yokes or Ball Game Belts." American Antiquity, Vol.6, No.4, 1941, pp.320-326.

[4]Isabel Kelly, "Notes on a West Coast survival of

islands of Haiti and Puerto Rico.[5] Inferential reports are available for the Bahamas[6] and some speculative archeolgical information from the Virgin Islands.[7]

In Haiti, the game itself, together with the ball and the court, all bore the name batey or bateo.[8]

Ball

The ball was made from the latex of a local, native tree. The latex was mixed with herbs and plant juices, then heated until it formed a paste which was rounded roughly into a ball. The final shaping was accomplished with a stone. The rubber by this time had turned black,

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the ancient Mexican ball game." Carnegie Institution of Washington, Division of Historical Research, Notes on Middle American Archeology and Ethnology, Vol.1, No. 26, Washington, 1943, pp. 163-175.

[5]G. F. de Oviedo y Valdes, Historia general y natural de las Indias. Madrid, Vol. 1, Book 5, 1851-55, pp. 163 and 165-167; and B. de Las Casas, Historia de las Indias, in Neuva Biblioteca de Autores Espanoles, Madrid, 1909, pp. 121 and 538.

[6]Anghera P. D'Matyr, Decadas Del Nuevo Mundo, Buenos Aries, 1944, Vol. 7, bk. 1 Ch. 2, pp. 502, bk. 2, Ch.3, p.508.

[7]G. Hatt, "Archeology of the Virgin Islands," Proceedings of the 21st International Congress of Archeologists, (The Hague) 1924, pp. 29-42.

[8]See Stern (1950) op. cit., p. 29, for a discussion of this term - its origin and cognates.

and was not sticky to touch. The ball was heavy, yet of a spongy texture; and possessed remarkable resiliency. A diameter of 4-6 inches is indicated.[9]

Court

As has been previously mentioned[10] the courts varied in size and may be regarded as much simpler versions of the more elaborate Mesoamerican courts.

Players

Both men and women played the game but competed only with their own sex. The men wore a small loin cloth and the women's playing apparel was an apron reaching to the knees.

Teams

Oviedo states that there were ten to twenty players on each side. Las Casas gives twenty to thirty.[11]

Betting on the games was common amongst the players themselves and also amongst the many spectators who watched the games.

Prior to the commencement of the game, the players

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[9] Las Casas op. cit., p. 29; and Oviedo, op. cit.,pp.163.

[10] See pp. 30-31.

[11] Stern, op. cit., p. 30-31.

took up positions on opposite sides of a transverse center line. Las Casas' description suggests that the players were spread out in depth from the center line to the end of the court.[12]

Play commenced after one of the participants threw or struck the ball over the center line.[13] The player nearest to where it landed or one who could contact it before it landed, returned it. The ball was in play as long as it was still bouncing within bounds. If it rolled it was declared dead and the game was restarted with a service.

According to Oviedo[14] the ball could be struck with the shoulder, elbow, head and knee, but the players used their hips more than any other part of their bodies. Las Casas[15] states that men usually took high balls with the shoulder, low ones with the hip, while women commonly used their knees or closed fists. Both writers comment on the agility required to keep the ball in play. Players are described as leaping high into the air to return a high shot and diving to the ground; bracing the body with one

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[12]Stern, op. cit., p. 31.

[13]There are no available details on whose prerogative it was to put the ball into play.

[14]Oviedo, op. cit., cited in Stern, loc.cit.

[15]Las Casas, op. cit., cited in Stern, loc.cit.

hand in order to contact a low ball with the hip.

Play continued until one side or the other lost the rally by letting the ball pass the end line or low end wall of their court or allowing the ball to stop bouncing in their court. A ball which passed beyond the side walls did not result in a fault against either side. The ball was returned to the serving side for another service.

The historical sources and archeological evidence associated with the courts indicates that the game had some ceremonial and religious significance. However, the early historicans make little mention of any religious significance the game may have had. Most of the speculation arises from archeological discoveries associated with the ballcourts. The dual function of the ballcourts in providing a facility for community festivals and dances (some of them religious in character) as well as ball games, is well established. This fact seems to have resulted in a stronger assumption of a closer connection between religio-ceremonial and recreational motives than is warranted. The historical sources generally indicate that the game held an important position in the daily life of the people. It served as a social inter-community bond. The secular nature of the game seems to outweigh any other motive. Religio-ceremonial aspects "may safely be viewed as an index of their(ballcourts) focal position with regard to the

community in both its material and social manifestations."[16]

While Rouse[17] considers ballcourts in the Antilles as a product of period IIIb, IVa and IVb, with most from the two later periods, there is a strong possibility that games may have been present from a much earlier time. Earlier forms of rubber ball games may have been played on non-structural courts of the type used by the Otomacs of the circum-Caribbean mainland. There are many similarities between the descriptions of the forms of rubber ball games as played in the Antilles and those played by the Otomacs, especially the participation of both sexes.[18]

The rubber ball games played in the Antilles lack many of the refinements of the Mexican "tlachtli" and the Mayan "pok-ta-pok". The courts were much less elaborate and did not have rings. It appears that the games were relatively secular, and both men and women participated. However, the main features of the game of "batey" indicate a connection with the Mexican and Mayan games. Alegria[19] considers that the Antillean "batey" is a

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[16]Stern, op. cit., p. 32 [17]Rouse,(1951) op. cit.pp.257-8.

[18]J. Gumilla, El Orinoco Illustrado, Vol.7 Tomo. 1, p. 165, 1748, cited in Alegria, op. cit., p. 348.

[19]R. E. Alegria, "The Ball Game Played by the Aborigines of the Antilles," American Antiquity, Vol.16, 1950, p. 348.

simplified version of the Mayan"pok-ta-pok", adapted to the cultural level of the "Tainos". He hypothesises that the game diffused to the Antilles not directly from Yucatan, but via South America.[20]

Mayan Versions

For many years after Blom's[21] monumental study, the rubber ball games of the Americas masqueraded under the title of "The Mayan Ball Game". Paradoxically, the only extensive evidence of the Mayan version or versions of the game is archeological testimony. There is no extensive written account to describe the game amongst the Maya at contact time.

As Stern[22] points out, early Spanish chroniclers, such as Motolinia and Duran, observed the game among the late Maya. However, they also worked in central Mexico, Guatemala and elsewhere; therefore, we cannot be certain that their reports refer specifically to the Mayan versions of the game.

The only written account which can be recognised as a direct reference to the Mayan version, is the Quiche

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[20] ibid. This hypothesis is discussed in Chapter V, p. 141.

[21] Blom, op. cit., passim.

[22] Stern, op. cit., p. 34.

Maya chronicle, the Popul Vuh.[23] Even with this document, the original of which was written in post-Conquest times, we must allow for Late Postclassic influences from Mexico, as we have no proof regarding the antiquity of the account in its present form.

Thus, our knowledge of the earlier forms of the Maya game depends mainly upon the ballcourt structures and the archeological representations of players. To this may be added, with reservation, the pertinent references from the Popul Vuh.[24] Even with this information available there are further difficulties. The Mayan ballcourts show both regional and temporal differences in structure. These may be merely architectural variations, but in some cases may reflect different forms of play over space and time.

The Ball

There is no valid information regarding its weight or method of manufacture, but its size is suggested by bas reliefs and figurines as being about 6-10 inches in

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[23] Popul Vuh, The Sacred Book of the Ancient Maya, English version by Delia Goetz and Sylvanus G. Morley, from the translation of Adrian Recinos Norman, University of Oklahoma Press, 1950.

[24] The English version of the French translation as previously cited, was the source used for this paper. Page citations refer to that source. The Popul Vuh refers to the game played during an unspecified period by the Quiche Maya. It is only by inference that it can be extended to cover the games played by other peoples in the Maya area.

diameter.[25] Players were expected to own their own ball, and other playing equipment which was mainly protective in nature.

> "We shall use our ball," said the Lords of Xibala. "By no means, shall you use (your ball), but ours," the boys answered.[26]

> . . . their leather pads and rings and gloves and crown and masks which were the playing gear of Hun-Hunahpu and Vucub-Hunaphpu.[27]

The Court

The typical Mayan courts have been described previously. It might be added that according to the Popul Vuh, they were used frequently, and evidently were swept clean prior to each match.

> The boys returned happily to the ballcourt to play; they were playing alone a long time and cleared the court where their parents had played.[28]

Players

There is no evidence of women as players. The Popul Vuh seems to indicate that both young men, even boys, as well as older men enjoyed the game.[29]

From the descriptions in the Popul Vuh, sculptured

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[25] See Figure 38.

[26] Popul Vuh, p.144 and 134.

[27] ibid. pp. 111 and 134-5.

[28] Popul Vuh, p. 136 - Parents refer to males only.

[29] ibid. pp. 109,136,142-5, 152-3.

representations, and according to the Spanish chroniclers, players wore an impressive array of protective and ornamental equipment. As is the case with American and Canadian football, the Mayan version of the game depended a great deal on the use of this protective equipment. A detailed description of the equipment follows in the next Chapter.

The Popul Vuh describes singles matches,[30] doubles,[31] and matches between uneven numbers on each side.[32] Larger numbers on each team are indicated on the reliefs at Chichen ballcourt.

Play

Brasseur's translation of the Popul Vuh suggests that the first service was made by the team providing the ball. The provider of the ball was usually the home team. Services in the course of the game seem to have been rather by the winners of the previous rally.[33] Just how the serve was made in unknown.

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[30] ibid, pp. 109, 136. [31] ibid, pp.109,148

[32] ibid, p. 145.

[33] Bourbourg de Brasseur,(Translation) Popul Vuh, Le Livre Sacre et Les Mythes de l'Antiquite Americaine, Paris, Arthus Bertrand, 1861, pp. 151-153.

The reliefs at Chichen Itza are consistent in showing the ball being struck by the players' hips or rather by the heavy, broad belt worn on the players' hips. The lack of any suggestion of the use of the hand or arm, head or shoulders seems to indicate that the use of these body parts constituted a fault.

Scoring

There has been considerable controversy over the scoring methods employed by the Maya. Most of this controversy has been centered about the use of vertical rings on each playing wall. However, an examination of the evidence put forward by Blom,[34] Stern,[35] Clune[36] and Thompson[37] seems to indicate that the rings were a late addition to Mayan courts, being introduced from Mexico. The archeological evidence shows that most Mayan courts which have been discovered do not possess rings.[38] It is highly probable then, that the main scoring method over time and

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[34]Blom, op. cit. pp.488-516. [35]Stern, op. cit.,pp.40-41.

[36]Clune, op. cit., p. 32.

[37]J. E. S. Thompson, "Yokes or Ball Game Belts," American Antiquity, 6:4, 1941, p. 324.

[38]A. L. Smith, (1961) op. cit., p. 119.

space in the Mayan versions of the game depended on the ball going dead, passing the end line or wall; or on committing a foul by body fault. The Popul Vuh obviously reports on the Mexican-influenced period when rings were used as a scoring system.

. . . "and then they drove their ball through (the ring of Xibalba), and with this the game ended."[39]

However, in an earlier passage describing the same game, the two young heroes lose a point when the ball bounces about out of control on their side of the court. This outcome is more likely to have been a basis for point winning in the majority of versions in the Mayan period and area.

Stern suggests that the number of points appears to have been agreed upon prior to the commencement of a game.[40] This is supported indirectly by evidence from other periods and regions, namely, the West Coast, Antilles and Mexico.

Ceremonial Associations

Both the Popul Vuh and archeological sources suggest that the ball game had a strong ceremonial character. The ball game is linked very closely with the gods in the Popul Vuh. Most ballcourts were usually contained within the ceremonial centers. The elaborate apparel of players

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[39] Popul Vuh, p. 145. [40] Stern, op. cit., p.41.

represented in figurines (See Figure 41), and reliefs (See Figure 32), all support the ceremonial aspect.

However, there seems to be little in the Mayan culture which was not in some way associated with ceremonialism. The ball game, seemingly a very popular activity among the people, could hardly avoid being drawn into ceremonialism. In spite of this association it would be erroneous to overemphasise its ceremonial role when so many secular functions are clearly discernible. The Popul Vuh gives it a recreational flavour.

> Well, Hun-Hunahpu and Vucub-Hunalpu did nothing but play dice and ball all day long; and when the four got together to play ball, one pair played against the other pair.[41]

and

> . . . the hawk perched upon the cornice of the ballcourt where Hunahpu and Xbalanque were amusing themselves playing ball.[42]

It is depicted in the Popul Vuh as a recreation by the common people and also as a highly competitive sport.

Stern[43] has carefully examined the lexical roots relating to the ball game. He concludes that there is considerable evidence to support the existence of three types of ball games, distinguishable by the methods used in propelling the ball. The first, employing the morpheme

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[41] Popul Vuh, p. 109. [42] ibid. p. 138.

[43] Stern, op. cit., pp. 43-45.

"pitz", implies using the hips; the second "pox" implies the use of the hands; the third "poc" suggests that the feet may be used to propel the ball. If this is so, it helps to support the hypothesis stated earlier, that ballcourt structures were not limited to a single form of game.

Mexican Versions

For southern and central Mexico two forms of evidence are available. A considerable collection of written accounts produced by European or by Spanish-educated natives after conquest, deal specifically with the game in the Valley of Mexico. A few written accounts deal with other areas at vaguely indicated time periods. Pictorial evidence in the form of codices provide the second form of evidence. Unfortunately, archeological evidence in the form of ballcourt structures is very meagre.

The written evidence varies in value. Some of the early writers relied heavily on their contemporaries, others wrote seemingly first hand accounts whilst seated at their desks in Spain. Those who did have the opportunity to compile eyewitness accounts have obviously described what they saw in terms of the games then popular in Europe. Two of these European games, paume,(an early stage of modern tennis),pelota(origin of the Basque game jai alai), and pallone which sometimes involved striking a stuffed or inflated ball against the side and end walls

of a structural court. Both were popular in Spain, especially with the noble classes of the sixteenth to eighteenth centuries.[44] As can be expected, the European, post-Conquest writers used terminology and inferences drawn from what they knew of games in their homeland. The Mexican game they described may be summarized as follows:

Ball

The ball was manufactured from the sap of a tree which grew in the tierra caliente.[45] The ball was solid and according to Duran,[46] the size of a small bowling ball.[47] Oviedo,[48] when speaking of the Antillean ball, describes the resiliency of the ball in plain words:

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[44]These games are described in detail in Appendix D.

[45]Blom, op. cit., p. 498, points out that this area is not in Toltec-Aztec territory but on the eastern slopes of the Oaxacan mountains and in the adjacent Gulf lowlands. The balls were obtained by trade or tribute, as is confirmed in the Codex Mendoza (Fol.45.V,46 r) from the Olmeca (the rubber people).

[46]Diego Duran, "Historia de las Indias de Nueva-Espana y Islas de 'Tierra Firme'",J. M. Andrade y F. Escalante, Mexico, 1867-80 in Blom, op. cit., p. 498.

[47]However there is conflicting evidence on size. It may be generally assumed that the size was variable.

[48]Valdes y Oviedo, Fernandez de Gonzales, "Historia General y Natural de las Indias, Islas y Tierra-firme del Mar Oceano." Imp. de la Real Academia de la Historia, Madrid, 1851-55, in Blom,op. cit., p. 494.

> Without comparison these balls jump much more than those filled with air because by simply dropping it from your hands on the ground it jumps much higher in the air and gives a jump and another, one more and another and as many more, the jumps becoming smaller every time.

Court

Motolina[49] tells us that the principal ballcourt in each town was centrally situated in the market place. Duran[50] seems to imply that the courts were built as a community project. Other writers say that the court was built and owned by a noble or chief.[51]

Players

The game seems to have been very popular amongst both ordinary people and the nobles.

Torquemada[52] tells us that ball games often were played in the market place during fairs. There is no evidence of women playing the game. The players' equipment, which will be described in detail later, is described simply by Duran:[53]

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[49]Motolina, "Memoriales de Fray Toribio Motolina," Manuscrito de la Col. del. Dr. D. J. G. Icazbalceta, Mexico, 1903, in Stern op. cit., p. 51.

[50]Duran, loc. cit. [51]Stern, op. cit., p. 51.

[52]Juan de Torquemada, Primera (Seunda, Tercera) Parte de los Viente i vn Lisbor Rituales i Monarchia Indiana. N. Rodriguez Franco, Madrid, 1723, in Blom, op. cit. p.498

[53]Duran, op. cit., in Blom, p. 493.

> All those who entered this game, played with leathers placed over their loin-cloths and they always wore some trousers of deerskin to protect the thighs which they all the time were scraping across the ground. They wore gloves in order not to hurt their hands, as they continuously were steadying and supporting themselves on the ground.

Playing Methods

We are led to believe from most accounts that the ball had to be struck with the hip, buttock or knee. A point was forfeited if the ball was struck with any other part of the body. There is reason to believe that this was the purest form of the game. However, according to Duran, there were other methods of propelling the ball. Stern cites Martyr[54] as stating that the Mexicans played with shoulders, elbows, head and rarely with the hands, while they sometimes struck the ball with the buttocks as well. Stern also cites a passage of his own translation, from Hernandez, which seems to indicate that there were probably different restrictions on the use of body parts according to the standard of the players:

> They drive the balls with various parts of the body and they are returned by those guarding the opposite goal, and it is not permitted to touch them with the hands. At times, by agreement of both sides, it is allowed to touch them only with the hips and only on the first, second or third bounce.[55]

It is not certain how the ball was put into play to

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[54] Anghera, d'Martyr, Decasas del Nuevo Mundo, in Stern op. cit.,p. 59.

[55] F. Herandez, Antiquedades de la Nueva Espana.(trans. by J. Garcia Pimental),Mexico, 1946, in Stern op. cit.,p.59.

begin a match. However, it seems that a service was merely to get the ball into play. If this did not happen the service was repeated.

The ball was in play as long as it was still bouncing, but according to Duran, it had to be returned past the middle (transverse) line by a distance of a least two fingers before it was acknowledged as a fair return. Each team defended a specified ring affixed high at the centre of the side walls and an end wall. Players evidently had set positions. Each team stayed within its own half of the court. Before the match began the number of points required to win was decided upon. Points were earned in three ways: if the ball was sent over the end wall or made contact with it; if the ball touched a part of an opponent's body outside the agreed prescribed limits (body fault); if the ball went dead within the opponent's half of the court.[56] In addition to these scoring methods each team had the opportunity to win the game outright if it could send the ball through the ring which had been assigned to it. However, this was a very difficult feat and was rarely accomplished. The player who did manage it was feted. Motolinia states that the fortunate player was allowed to take possession of the mantles (cloaks) of

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[56]The playing methods and scoring procedures have been summarised from the works of Blom, op. cit., and Stern op. cit., who have examined closely the relevant passages of Duran, Gomara and Sahagun and other early Spanish writers.

of all the supporters of the defeated team.[57]

This was no doubt, a very fast, vigorous game. Great agility and endurance must have been necessary for successful play. The game could be extremely hazardous for players. A blow from a hard-driven ball could result in serious injury; and according to Duran,[58] often proved fatal. The need for protective playing equipment can well be appreciated, not only for protection from the ball, but to prevent abrasions and bruising from the many contacts, both purposeful and accidental, with the hard walls and floor. Duran[59] reports that many players required attention for bruises on the thighs and buttocks. Lancing the area was the usual practice.

Nearly all the accounts of the game either describe it for the Valley of Mexico or else cannot be specificially localized. However, Stern[60] cites a report on the game from Tlaxcala, written shortly after the conquest. This report indicates very little disparity between the two areas, except that the writer claims participation by the noble class only. Stern points out that this may be the writer's desire to establish the prerogatives of the class of which he himself belonged.

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[57] Motolinia, cited in Stern, op. cit., p. 60.

[58] Duran, op. cit., in Blom, op. cit. p. 493-494.

[59] ibid, p. 494.

[60] Stern, op. cit., p. 61.

The game had a place in the every day life of the people. Large, ornate ballcourts were located in the market places of Valley of Mexico cities. Smaller, simpler structures, were situated in the suburbs. On the numerous festival days, the upper classes thronged the courts to play themselves, or to watch their own or other professional teams play.[61] Duran's statement that the walls "swarmed with people when there was a game of nobility, which was whenever the pursuit of war stopped, by reason of truces or for other causes, and gave them the opportunity,"[62] seems to indicate that other people besides the upper classes attended the games.

All of the early writers underscore the heavy wagering on games and its very belligerent nature.[63] The magico-religious associations of the game are emphasised in Duran's description of the pre-game preparations:

> Having recounted the ways of the nobles when playing this game of ball for their recreation and enjoyment, we will now deal with those who played it for gain and as a vice, selling all their happiness and effort not to lose but to win, as gamblers who had no other

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[61] Stern, op. cit., p. 62.

[62] Duran, op. cit., p. 243, translation by Stern, op. cit., p. 62.

[63] Particularly Duran, cited at length in Blom, op. cit., pp. 491-503.

> business, who did not live from other sources nor had any other occupation than this, whose children and wives always lived on borrowed bread and begging from their neighbours, molesting everybody, as even among our own people happens, that they send here for bread today, and tomorrow there for vinegar and another day for oil etc. . . . In this way these usually poor and adventurous people lived without sowing nor harvesting nor knowing anything other than gambling, and of these gamblers some would find themselves prosperous without any enlightenment and thus moved and persuaded by desire and greed to win, they made a thousand ceremonies and superstitious deeds and invented prognostications and idolatries of which I will now tell.
>
> First it should be known that these gamblers by nightfall took the ball and placed it on a clean plate with the leather loincloth and the gloves, hanging it all on a pole and crouching before these instruments of the game, they worshipped them and spoke to them with certain words of superstition and incantations with much devotion praying to the ball that it should be favorable that day . . .[64]

The deeply religious ceremonial pattern of Aztec life seems to be epitomized in its association with the ball game. No doubt, the idolatrous nature of ballcourts with their images of the god of the ball game on each wall was the main reason behind the Spanish destruction of all Mexican ballcourts.

Stern[65] has presented a thorough report on what is known of the religious backgound of the ball game in the Mexican region. However, he cautiously concludes this description of the religious role of the ball game with the following statement:

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[64]Duran, op. cit., in Blom, op. cit.,p. 501.

[65]Stern, op. cit., pp. 63-71.

> Yet it is easy to go too far in this direction, to ignore the appeal, direct and uncomplicated, which the game made through its sportive qualities.
>
> and further
>
> There thus emerges a manifold significance which the ball game may be said to have possessed for the Mexicans. It shines at times with the reflected prestige of a higher civilisation. It may become the image of opposed and contending forces, of warfare, and of death through sacrifice; and in a derivative sense it may thus be drawn into ceremonials revolving around propitiation of the gods. Finally in a secular aspect, it may be regarded as a sport.[66]

With our dependence on the early Spanish eyewitnesses, and their later plagiarists, we must make allowances. Firstly, it is possible that only instances of major ball game matches caught their attention. As these matches would probably be the more ceremonial in nature, then perhaps we read the details of a biased sample.

The lack of evidence supporting a secular use for the game amongst the masses; that is, for people to play the game merely for the enjoyment they derived, may be due to a number of reasons. Foremost among these may be the fact that such a use simply did not exist amongst the higher forms of civilisations of the Mexican regions. The urbanised nature of the Aztec civilisation may have been paramount in limiting the scope of the game to a certain class. The lack of archeological evidence limits our knowledge of the extent of the game. It is unlikely that a large percentage of the people took part in the game.

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[66] Stern, op. cit., p. 71.

If this had been so then the Spaniards would have had much more difficulty in stamping out the game than they seem to have had. One does not need to have much knowledge of history to know that a popular activity of the masses is particularly difficult to suppress by a conquering force. The Spaniards seemed to meet with no difficulty. It is fairly logical to postulate, then, that the court ball game was not practised by the common people in any appreciable number, but by a relatively small number of the upper class and professional players. The extent of this speculation is, of course, limited by temporal factors. The archeological void prevents analysis in temporal depth.

Northern and Western Versions

As reported for this region in the previous chapter on ballcourts, there is no evidence for the Northern Interior as far as the playing of rubber ball games is concerned. However, ethnographic and archeological information is available for the west coast; where the game, without structured courts, has survived to the present. Clavigero[67] reported the ball game among the Nayarit, Opata and Tarahumare during the eighteenth century.

Detailed accounts are available only for Nayarit,

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[67]Clavigero (1917) Vol. 2, p. 215, cited by Stern op. cit., p. 78. However, Stern could find no evidence to to support Clavigero's report for the Opata and Tarahumare and suggests that it was hearsay information which became confused with the "kicking race" game.

Cahita, Acaxee and Mocorito groups, with only fragmentary information available for others. The difficulty of inference and comparison back through the years must be realised . . . "as three hundred years separate the Nayarit and Mocorito accounts from those bearing on the other two peoples, during which time both European and central Mexican influences must have exerted strong pressure for change."[68]

In the Acaponeta Valley of coastal Nayarit, Isabel Kelly,[69] witnessed a modern form of rubber ball game. It appears that the game had been frequently played prior to 1930, but thereafter played only on Sundays and other holidays. The game was played with a solid rubber ball which varied in weight and size. The example described by Kelly had a diameter of about seven inches and weighed about eight pounds. The ball was made from the sap of trees growing in the coastal country. The latex was mixed with a solution of a special herb[70] and heated to a certain established consistency. The coagulated latex was then amassed in small increments, by drawing it off, adhered

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[68] Stern, op. cit., p. 79.

[69] Isabel Kelly, "Notes on a West Coast Survival of the Ancient Mexican Ball Game," Notes on Middle American Archeology and Ethnology, No. 26, Washington: Carnegie Institute of Washington, 1943, pp. 163-175.

[70] I. Kelly, op. cit., p. 164, describes this as the root of the machaquana (Operculina rhodocalyz(gray)Standl).

to a stick, until a ball was formed. The ball was shaped on a flat board. Excess liquid was removed during this shaping process. The final process was to smooth and polish the ball with a stick.

Kelly states that the ball was washed, dried and suspended in a bag after each match. With this special care it lasts about six years. A specimen in the Museum of Anthropology, University of California, Berkeley, although very old and misshapen, bounces waist high when dropped from that height.[71]

The players wore only a breechcloth and a special belt supporting a leather pad.

The playing area was about 15 yards long and 3 yards wide. Stones, bricks or wooden stakes, set flush into the ground, marked the four corners and the transverse center line across the court. Lines joining these markers were drawn in the earth with the foot.

Although the game was sometimes played as a singles match, it was usual for teams to consist of from two to five players. When there were five, one player was placed at the center line, with the remaining players of his side strung diagonally behind him. The player nearest the back line was called the "golpeador,"striker.[72]

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[71] ibid, pp. 164-5. [72] ibid, p. 167.

Kelly's detailed description of the game follows:

> At the beginning of the game an umpire (juez) . . . or two, one for each team . . . stood at the centre line. He started the play by rolling the ball into court . It was recovered by any player who happened to be near. He then threw the ball swiftly (again, with the hands) into the court of the opposing team. One of the latter returned it, either at full volley or on the bounce; he was required to receive it either on the hip or on the thigh, to within four fingers' distance of the knee. Disputes were settled by examining the welt left on the body. If the ball hit outside the acceptable hip - thigh zone, or if it were not returned to the other court, a point was scored for the opposing team. Apparently the ball need not be returned on the first bounce. A player fell to the ground to receive a low ball and leapt into the air for a high one. He could receive on either hip, according to personal preference, but a given player always used the same hip. . . It need scarcely be remarked that the game was dangerous. If the player misjudged by a few centimeters he received a heavy, moving body in the solar plexus. Injuries frequently were fatal.
>
> It is said that if the ball were received initially by the center player and if the latter did not touch the central line with any part of his body, his team had the right to invade the territory of the opponents. The advantage of such an invasion is not understandable unless the end zones functioned as goals . . . In so far as I could determine, scoring was exclusively by means of failures made by the opposing team: by failure to return the ball by means of the hip-thigh blow; by having the ball fall in one's own court or by knocking the ball out of bounds. A ball which fell outside the court, without first having bounced within, was called muerta (dead).[73]

Kelly discusses a controversy over the role of the end line as goals. It seems as if they were used as goal lines. The team propelling the ball past their opponent's end line scored.[74]

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[73] ibid, pp. 167-168 [74] ibid.

After a point had been scored, play was restarted by the winner of the previous rally. The golpeador called his team's score and then either threw or rolled the ball into the opponent's court. The method to be used was determined by the serving team's score.[75]

Kelly infers that a game was played to either eight points or on a predetermined limit.[76]

From Kelly's description it appears that normally a double scoring system was used, that is, the team winning a rally scored a point while the loser of the rally had a point deducted from its score.[77] A more complex scoring system was also used occasionally. Kelly describes this method in detail.[78] However, it is doubtful whether this method was in common usage.

Games were lengthy affairs, lasting "from about 4 o'clock until dark, without rest periods. With good players a game might have to be continued three or four days, being resumed at the score of the previous afternoon."[79]

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[75] According to Kelly, loc. cit., the ball was thrown on the scores of 1, 4, 5 and rolled on 2, 3, 6 or 7.

[76] ibid.

[77] There is no mention of a score less than zero and so it may be assumed that a team would require a positive score before losing a point. In other words a team did not acquire a minus score.

[78] I.Kelly, op. cit., p. 169-70 [79] ibid. p.170.

The game in its modern form in Nayarit is completely secular, and although no mention of inter-village or inter- group competition is made, it is possible that this did occur.

Kelly reports that a team was organised by a "promoter" who wagered on his team. This promoter organised, coached and fed his players. He insisted on a strict training regimen which involved dieting, a pre-match curfew, and abstinence from sexual intercourse prior to a game. Players always bathed immediately after a game.[80]

Heavy gambling was part and parcel of the game. Both men and women participated as spectators and in the gambling.

Because of the lack of evidence for pre-historic versions of the game both in this area and in the higher culture areas of Mesoamerica, it is difficult to make any valid comparisons between the modern west coast survival and the pre-Conquest versions. However, many common traits are obvious: the solid rubber ball; length-breadth ratio of the playing area; heavy betting; spectator interest; professionalism; involvement of a promoter; protective playing equipment; pre-game conditioning, and the use of hip and thigh only for striking the ball.
There is every reason to believe that "this west coast

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[80] ibid, p. 171.



Figure 11. Artist's impression of players on a Mesoamerican ballcourt using stone yokes and palmate stones.
(Borhegyi, 1963, Fig.3. Photograph by courtesy of the Milwaukee Public Museum).



occurrence should be regarded as a modern, peripheral survival either of an archaic form or of a simplified version of the classical game."[81] Other similar forms of the game have been described for southern Sinaloa.[82]

Lloyd[83] has described a game involving the striking of a rubber ball with the hips amongst a Cahitan Yuqui group. Beals[84] has outlined a similar game amongst other Cahitan groups. This game is still played in the Sinaloan municipios of Mazatlan and Concordia. It is played on a cleanly swept plaza area measuring about 50 meters long and 8 meters wide. A transverse center line bisects this rectangular area. From four to eight players make up a team. As with the Nayarit game, betting is heavy. There is little information concerning ceremonial associations.

A comparison between early games in southern and central Mexico and those described for northern Mexico, at first reveals some positive differences. Courts, where

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[81] I. Kelly, op. cit., p. 172.

[82] Walter Krickeberg, Las Antiguas Culturas Mexicanas, Fondo de Cultura Economica, Mexico, 1961, in Kelly, op. cit., p. 83.

[83] F. E. Lloyd, "Guayule (Parthenium argentatum Gray) A Rubber-Plant of the Chihuahuan Desert," Washington: Carnegie Institute of Washington, 1911, p.5.

[84] Ralph I. Beals, "The Aboriginal Culture of the Cahita Indians," University of California, I. A. No. 19, Berkeley, 1943, p. 34.



Figure 12. Tarascan pottery ball court group showing 7 players, 5 rubber balls and spectators seated on the walls around the court. Made in Nayarit on the northwestern coast of Mexico in ca. 1400 A.D. (Courtesy of the Milwaukee Public Museum).



they exist, are less complex. While the average size of a team might be comparable with the Aztec or Mayan versions, the minimum number is greater. There seem to be basic resemblances between rules of play for the Nayarit and Acaxee versions when compared to those of the early South. The body fault appears in all three.

The Game in Arizona

We have already assumed that a rubber ball game, similar to the Mesoamerican version, or more precisely, versions, was popular in Arizona from about A. D.600 to A. D. 1150. However, even Haury admits that "there is no real evidence, either material or traditional, as to the particulars of the game which was played in these courts,"[85] though he urges that "one may infer from the general form of the courts and of the details, that the game was much like that played by the Southern tribes."[86](in Mesoamerica)

In a recent article, Haury goes as far as stating that the game played on the Snaketown type court was almost identical to the Aztec or late Mayan version, even to the extent of indicating that rings were used as goals.[87]

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[85]H. S. Gladwin, et. al., 1937, p. 47.

[86]ibid, p.48.

[87] Emil W. Haury, "The Hohokam," The National Geographic Magazine, Vol. 131, No. 5, Washington D. C.: National Geographic Society, May, 1967, pp. 678-679.

However, there is no evidence to substantiate these claims. It is almost certain that rings were never used in Arizona.

Chard[88] exercises reservations as to the type of game played in the courts of Arizona, even to the extent of suggesting that a form of shinny could have been played on at least some of the courts. He suggests that it is conceivable that a game similar to Mayan "pok-ta-pok" could have been played on the larger Snaketown type courts with their higher walls, but that the low walls of the Casa Grande type court would not be as suitable for such a game. He suggests that a game similar to shinny could have been played in these smaller courts.[89] Chard has received no support on this issue. He seems to ignore the fact that verified ethnohistorical evidence describes a game similar to "pok-ta-pok" on small, low-walled courts in the Antilles. Since Chard's article, evidence from Kelly[90] verifies that a rubber ball game was played in Nayarit on courts lacking walls. On the other hand it is quite possible that more than one kind of game was played on the courts in Arizona. A type of shinny is more likely than any other alternative, as the tribes in this area still play this game on an

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[88] Chard, op. cit., pp. 13-14.

[89] ibid, p. 14.

[90] I. Kelly, (1943) op. cit., passim.

open field.

Arizona remains the only area in which pre-historic rubber balls have been discovered. Three have been found in the area once occupied by the Hohokam.[91] Only one of these has been preserved and analysed. The ball was discovered near Toltec, Arizona. Its association with Sacaton phase artifacts allowed Haury to assign a date of ca.A. D. 1000 to the ball.[92] It weighed about 7 pounds and measured about 7 inches in diameter. Chemical analysis revealed that it was made from the sap of a desert shrub native to the area.[93] However, neither this ball, nor the other two, were found at the actual site of a ballcourt; and their use in a ball game on structural courts is inferential.

No playing equipment, similar to that found in the Antilles or Mesoamerica, has been found in Arizona.[94]

There has been a tendency for unfounded assumptions, based on Mesoamerican comparisons, concerning the function of ballcourt use. The stereotyped inference is, that because in some areas and periods of Mesoamerica, ballcourts

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[91]Haury (1937) op. cit., p. 282-283, 287.

[92]ibid, p. 288.

[93]Probably one of the Guayule family of desert shrubs described previously on p. 10.

[94]Roger Kelly, op. cit., p. 78.

were strongly bound up with religion, Arizona should likewise have the same association between ballcourts and religion. Haury uses this Mesoamerican association as a reason for saying "this would be basis enough to infer a similar practice among the Hohokam."[95] This inference rests on very insecure foundations. It is a very common phenomenon in cultural borrowings to find that a trait that is religious in the original culture serves a purely secular purpose when adopted by a different culture.[96]

As has already been stated in the description of ballcourt structures, courts in Arizona do not play a central role in village layout. Only two exceptions amongst ninety courts examined have an association with other socio-religious structures.[97]

Only a meagre amount of information can be derived from special Hohokam artifacts or artistic expression. The use of rubber balls in a ball game is strongly inferred. The large number and distribution of ballcourts in Arizona suggests that they held a significant place amongst the activities of the people. On the basis of their marginal location in villages, and the dearth of specific ceremonial

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[95]Gladwin, et al.,(1937) I, op. cit., p. 41.

[96]Leslie Spier, lecture given at Harvard University, Fall 1939, cited by Chard, op. cit., p. 14.

[97]R. Kelly, op. cit., p. 86.

artifact associations, it would be more appropriate to suggest a social function rather than a religious function. The existing evidence is sufficient only for very conservative inference.

Summary

Historical evidence describes playing methods on only a few of the ballcourts in Mesoamerica and the Greater Antilles; no historical evidence exists to describe playing methods in Arizona. However, the archeological evidence available for all areas strongly suggests that rubber ball games were played on what are called ballcourts. The shape, size, and other variations in structural characteristics, seems to indicate that there were different types of ball games played over both time and area. Different rules, scoring procedures, and playing techniques are commensurate with marked differences in ballcourt structures. The use of a rubber ball was the common feature of all versions.

The historical evidence underscores the probability that the hands, feet and head were not used to propel the ball; the hips and buttocks were the main body parts used for this purpose. Archeological evidence, discussed at length in the next chapter, supports the use of hips and buttocks.

In Mesoamerica, rubber ball games had a strong religious function until the beginning of the Postclassic

period, after which, in certain subareas, the game developed a secular function while still retaining some religious significance.

In the Greater Antilles, both a religious and a secular function are suggested.

In Arizona, the hypothesis of a more secular than religious function is supported by archeological evidence of siting on the periphery of settlement sites.

CHAPTER V

PLAYERS' EQUIPMENT

The previous chapters have underscored the probability of diversity over time and space of ballcourts and methods of playing competitive rubber ball games. The very simple Antillean court is very different from the elaborate, late-Maya, vertical walled court. As might be expected, it seems that the range of playing equipment which was mainly protective in function, also varied considerably over space and time.

Most evidence for the use of protective equipment comes from eyewitness accounts of the contact-time Maya and Aztec. Passages in the Popul Vuh also elude to this aspect of the game.

For these areas, we are told that the ball was not permitted to contact the hands, calves, or feet of the players. It was struck with the hips and thighs to within four finger's distance above the knee. To protect the players from serious injury resulting from a blow from the heavy, solid ball, a leather or basketry belt was worn. During the game,in order to strike a low ball, it was frequently necessary for the player to throw himself to the playing floor, which was usually made of plaster and masonry. Therefore it was necessary for players to wear

protective padding on their elbows and knees. One of the Spanish eyewitnesses, Duran, describes some of the equipment in the following passage taken from his account:[1]

> All those who entered this game, played with leathers placed over their loin-cloths and they always wore some trousers of deerskin to protect the thighs which they were all the time scraping against the ground. They wore gloves in order not to hurt their hands, as they continuously were steadying and supporting themselves on the ground . . .

The Popul Vuh,[2] in describing the Mayan version of the time, states that each player owned the equipment he used in the game: the ball, ring,[3] hip-leather, glove, headgear and a face-net or mask.

Borhegyi[4] claims that there were several types of hand protectors; and that one of these, a "handstone," also served as an additional implement for striking for deflecting the ball. This is strongly disputed by Clune.[5]

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[1]Duran, op. cit., in Blom, op. cit., p. 493.

[2]Popul Vuh, op. cit., pp. 111-112.

[3]According to Joyce (1933:XXii) this could have been a portable wooden ring which could have been attached to the court wall.

[4]Stephan F. de Borhegyi, "Ball-game Handstones and Ball-game Gloves," in Essays in Pre-Columbian Art and Archeology, by S. K. Lothrop et al. Harvard University Press, Cambridge, Massachusetts, 1961, pp. 126-151.

[5]F. J. Clune, "Borhegyi's Interpretation of Certain Mesoamerican Objects as Ball-Game Handstones," American Antiquity, Vol. 29, No. 2, 1963, pp. 241-242.

Archeological evidence supports the inference that different types of stone artifacts, such as stone yokes, palmate stones, thin stone heads and possibly handstones, were used in connection with pre-Columbian ball game ceremonies or the game itself. The evidence suggests that heavy stone equipment was used during Early and Late Classic times (A. D. 200-900) in the Veracruz and Mayan areas. By the beginning of the Early Postclassic period the use of stone equipment was discontinued. Borhegyi suggests that the use of stone equipment coincides with the period of strong ceremonial association of the ball game, and the use of other material is coincident with a more secularized version.[6]

The use of leather, basketry and woven fibre protective equipment has been accepted from the accounts of the Spanish chroniclers. Unfortunately, none of this equipment was ever described in detail; and because of its physical nature, none has survived from pre-historic times. However, many stone artifacts have been discovered in or close to ballcourt sites. From inference, supported in some cases by figures on monumental architecture, (See Figures 32 and 44) or from clay figurines, (See Figures 41 and 43) there is a strengthening belief that many of these artifacts

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[6]Stephan de Borhegyi, "Pre-Columbian Ball-Game Handstones: Rejoinder to Clune," American Antiquity, Vol. 30, No. 1, 1964, pp. 84-86.

were either ceremonial objects associated with the game or that they may possibly have been used in the game itself.

There has been much reluctance on the part of the archeologists and anthropologists to accept this explanation of the origin and function of stone yokes, palmate stones, thin stone heads, elbow stones, three pointed stones and handstones. On the other hand,[7] some have found what they think is sufficient evidence to support the idea rather than discard it.

Mexican Stone Yokes

Stone yokes are usually shaped like the letter U (See Figures 13 and 14). A few are generally oval in shape except for a straight bar across one end (See Figures 13 and 17). The first type is usually referred to as an open yoke; the second as a closed yoke. Most yokes have been cut from diorite, basalt or other fine, hard stones. They are usually elaborately and beautifully carved and measure about 45 cm long by about 30 cm wide. The opening in open yokes is usually about 16-18 cm. These yokes have been found as far north as the Mexican State of San Luis Potosi to as far south as El Salvador and Honduras; however, most have been found in central and southern Veracruz.[8]

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[7] Gordon F. Elkholm, (1946 and 1961) and; Stephan de Borhegyi, (1960, 1961a, 1961b, 1963, 1964, 1966 and; T. A. Joyce,(1933).

[8] Ekholm, (1946), op. cit., p. 593.



Figure 13. An elaborately carved, open stone yoke from Tajin, Central Veracruz. Made of light greenstone, it is associated with the Early Classic (300 - 600 A.D.)
Length 40cm., height 12cm., weight 38 lbs.
(Courtesy Milwaukee Public Museum).



Figure 14. Plain, open stone yoke made of highly polished light greenstone from Central Veracruz. Late Classic period (600 - 900 A.D.)
Length 40cm., height 10cm., weight 32 lbs.
(Courtesy Milwaukee Public Museum).





Lothrop[9] was the first to propose that stone yokes were worn around the waist by ball game players. Ekholm[10] and Borhegyi[11] have reviewed the evidence in the form of the yokes themselves, and clay figurines and sculptures, presumably representing ball game players wearing yokes. Both seem convinced that the yokes had a ceremonial purpose as well as a functional use.

Ekholm's main criteria for a practical use of the yokes are:

a. That they are quite comfortable to wear around the waist; and ease of movement is surprising, despite their weight of from 40 to 60 pounds.

b. That the great uniformity in size of the yokes suggests a practical use; as "if they were merely sculptures, even though made in an unusually symbolic form, one might easily expect a much greater variation in size."[12]

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[9]S. K. Lothrop,"Stone Yokes from Mexico and Central America," Man, 23, No. 58, London, 1923, pp. 97-98, cited by Ekholm, op. cit., p. 594.

[10]Ekholm (1946), op. cit., pp. 593-606.

[11]Stephan de Borhegyi, "A Miniature Ceremonial Ball game Yoke from Mexico," American Antiquity, Vol.31, No.5, Part 1, 1966, pp. 742-744.

[12]Ekholm (1946),op. cit., p. 596.

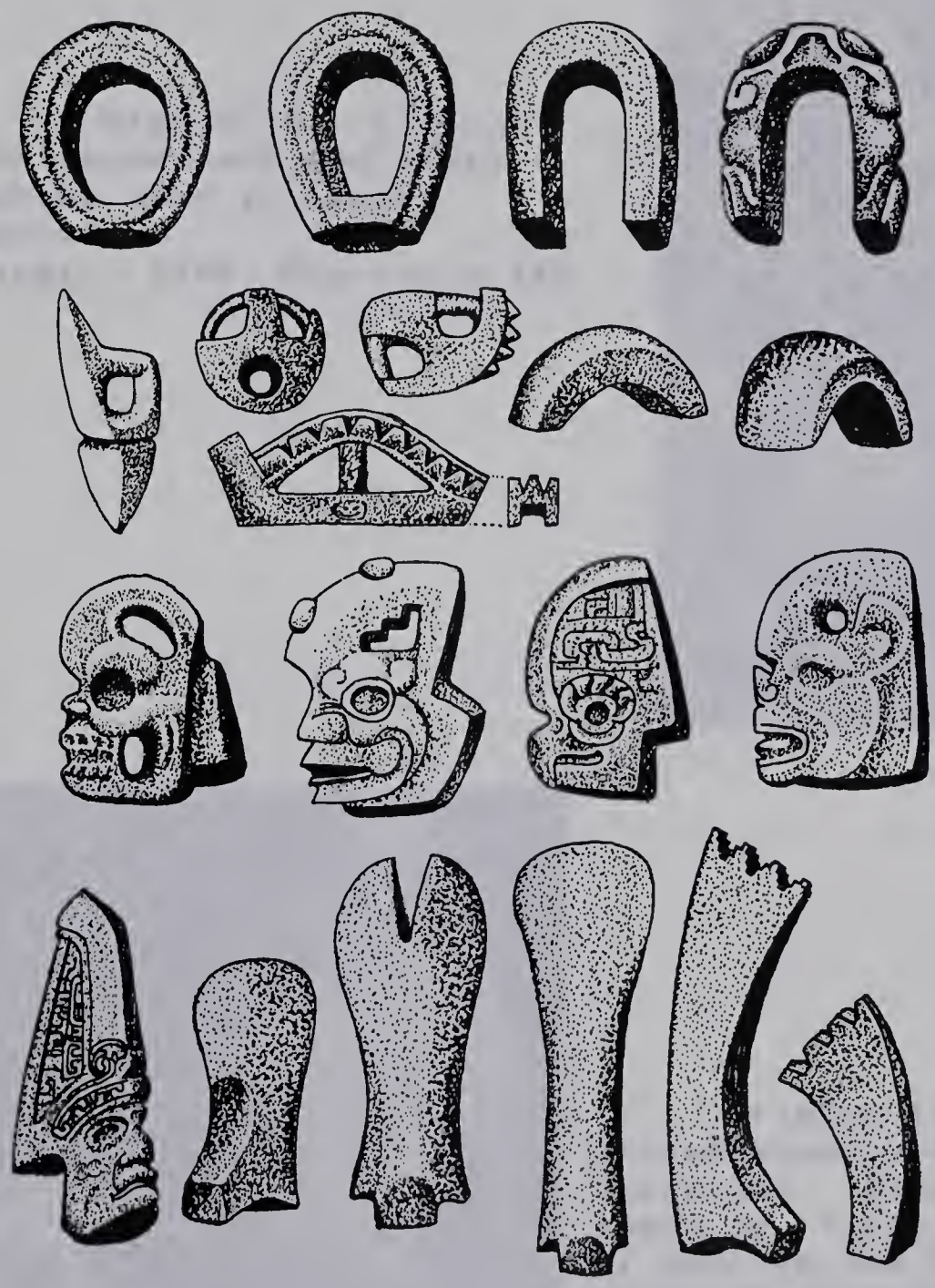


Figure 15. Ball game playing equipment. Stone yokes, both closed and open, handstones, thin stone heads and palmate stones, in that order, by rows, from top to bottom.
(Borhegyi, 1961, Fig. 1, p. 128).





Figure 16. Classic Period stone yoke and small handstone worn in manner suggested.
(Borhegyi, 1964, Fig.1,a,p.85).



Figure 17. Classic Period stone yoke and large handstone. Both these and those in Figure 16 are from El Baul on the Pacific coast of Guatemala.
(Borhegyi, 1964, Fig.1, b, p.85).





Ekholm admits that the stone yokes could have had a ceremonial significance and that they could have been replicas of basketry or other softer material belts which were used in the game. He concludes:

> . . . I would leave open the possibility that they may also have been worn to a certain extent in the actual playing of the ball game. The principal objection to this idea, is of course, that a yoke may be too heavy to allow a player to be sufficiently active. This would depend on how the game was played and, unfortunately, we know little of what its rules were.[13]

Borhegyi[14] supports Ekholm's case, in an hypothesis concerning Puerto Rican artifacts, by citing Ekholm's evidence and stating:

> There is now sufficient evidence to convince all but the most sceptical that the (Mexican)[15] stone yokes, like the Puerto Rican stone "collars" or belts, were actually worn by players during the game.[16]

The failure of any of the early historical writers to mention the use of stone yokes in any way at all means that they had become obsolete by the time of the conquest.[17]

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[13] ibid., p. 604

[14] Stephan de Borhegyi, "Pre-Columbian Ball-Game Handstones:Rejoinder to Clune," American Antiquity, Vol.30, No. 1, 1966, pp. 84-85.

[15] the parentheses are the present writer's.

[16] Borhegyi,(1964) op. cit., p. 84.

[17] There seems to be no doubt that they would have excited the curiosity of the early Spaniards whatever way they had been used.

This suggests a different version of the game at conquest time; perhaps because of different court construction or size;[18] and, as has been previously postulated, that the game had become more secularized.

Antillean Stone "Collars"

Ekholm[19] has capably reviewed the literature dealing with these artifacts; and hypothesized that they "were belts made to be worn around the waist, probably in connection with the playing of the ball game."[20]

The "collars" in Figures 18 and 19 are typical examples of slender and massive types. "Collars" have been found mainly on the Island of Puerto Rico, with smaller numbers located in eastern Santo Domingo.[21] According to Rouse,[22] most ballcourt structures, stone "collars", elbow "stones", and"three-pointed stones," were products of the latest phases of the Arawak or Taino culture. This is the period

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[18]There is reasonable evidence showing that courts were smaller at contact time than in early and late Classic times.

[19]Gordon F.Ekholm, Puerto Rican Stone'Collars' as Ball-game belts," In Essays in Pre-Columbian Art and Archeology, by Samuel K. Lothrop and others, Harvard University Press, Cambridge, Massachusetts, 1961, pp. 356-371.

[20]ibid, p. 359.

[21]J. W. Fewkes, "The Aborigines of Porto Rico and Neighboring Islands," Bureau of American Ethnology, 25th Annual Report, Government Printing Office, Washington, 1907, p.159.



Figure 18. Typical Antillean stone collars in the American Museum of Natural History, New York.
Top : Slender type, Bottom : Massive type.
(Ekholm, 1961, Fig. 1, p.357).





a b

Figure 19. Average-sized Antillean stone "collars" being worn in the suggested manners. a: Slender type . b: Massive type. (Ekholm, 1961, Fig.2, p.361).

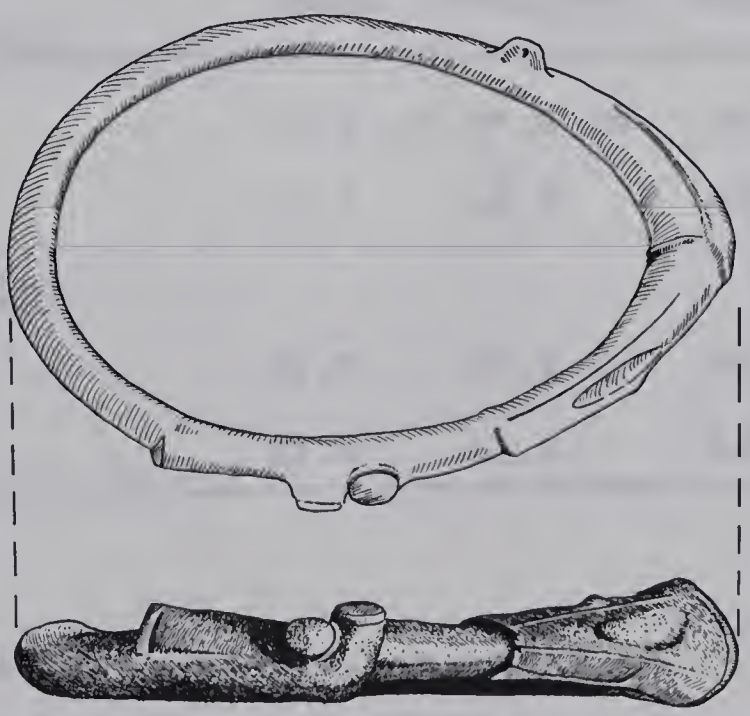


Figure 20. Slender type of Puerto Rican stone "collar" showing a special form of wooden prototype. (Ekholm, 1961, Fig. 6, p. 368).



from A. D. 1437 to contact time.[23]

Ekholm examined 41"collars" from Puerto Rico. The average weight of 23 slender "collars" was found to be 10.75 pounds with a range of 7.0 to 27.75 pounds. The massive "collars" averaged 34.25 pounds, with a range of from 13.5 to 62.5 pounds.

The dimensions of 40 typical "collars" available in the American Museum of Natural History and the Museum of the American Indian, Heye Foundation are summarized below.[24]

TABLE V

DIMENSIONS OF PUERTO RICAN STONE "COLLARS"

	Mean	Smallest	Largest	Range
Slender type (N=22)				
Interior Length	31.9 cm	29.2 cm	34.6 cm	5.4 cm
Interior Width	21.1	18.3	24.8	6.5
Massive type (N=18)				
Interior Length	31.7	30.2	33.5	3.3
Interior Width	21.8	20.7	24.0	3.3

[22]Rouse (1951), op. cit., p. 258.

[23]See chronological periods in the Antilles in Chapter II, p.20.

[24]After Ekholm,(1961) op. cit., p. 366.

It can be seen that these "collars" show a remarkable uniformity in size in their interior dimensions. As is the case with Mexican "yokes," this uniformity would seem to be significantly in favor of their having been made for a specific, practical function and not being merely ornamental or symbolic.

Ekholm[25] exposed the relationship between the interior measurements of the"collars" and the hip breadth measurements of other American Indian groups,[26] finding a high positive relationship. He also experimented with the wearing of collars by small statured subjects. He reports:

> . . . it quickly became clear to me, and to others who assisted, that the "collars" give every evidence of having been made for use in this way. If one tries on a "collar" of the right size, he finds that it fits remarkably well about the waist and that his natural reluctance to think of the possibility that any people may have chosen to wear belts of heavy stone seems to disappear.[27]

and,

> The light weight of the slender "collars" is clearly not much of a hindrance in any kind of running activity as is evident by trial. The weight of the massive "collars" is fairly considerable on the other hand, but it is surprisingly minimized when the "collar" is around the waist and on the hips where any weight is most easily carried.[28]

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[25] ibid, pp. 366-367.

[26] It is only possible to estimate the size of the natives of Puerto Rico by comparative methods, because they had become extinct before anthropometrical techniques were in use.

[27] Ekholm (1961) op. cit., p. 360. [28] ibid, p. 364.

Ekholm points out that of the 41 "collars" examined, the striking surface is fairly evenly divided between right and left sides, indicating the need for players having set positions on the court, rather than being indicative of individual preferences.[29]

It seems feasible, based on the available evidence, that these stone "collars" could have been used to advantage in the type of ball game played in the Antilles, as described earlier. With these, the ball could be given greater velocity and distance, making the game more open and giving the players additional time to make shots. Ekholm[30] speculates that the massive "collars may have been used by backline players in order to allow them to get greater distance than they could with the lighter, slender "collars." This hypothesis seems quite plausible.

Alegria has reported that fragments of "collars" are often found in or close to excavated ballcourt sites.[31] He also reports the discovery of complete "collars" near ballcourt sites, and that most "collars" have been found in regions where court sites are common.

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[29] loc. cit. [30] ibid, p. 365.

[31] Alegria, op. cit., p. 349, and; Rouse, op. cit., p. 477, reports the discovery of three fragments of stone collars in excavations near the central plaza at Capa, Puerto Rico.

Joyce[32] claimed that stone "collars" are replicas of wooden forms, reproducing the ends of the wooden parts and the lashing that held them in place. Joyce published a photograph which seems to indicate that "collars" of the slender type were made from that part of a tree where a branch meets the trunk. The reproduction of a drawing taken from Joyce's photograph (seen in Figure 20), shows how the wooden "collar" was fastened together after being fitted around the wearer's waist.

Despite Ekholm's strong argument, there is no real proof that stone "collars" were used as ball game belts. There is every possibility that they were merely replicas of wooden "collars" that were so used.[33] Further evidence is required before any conclusions may be reached.

Elbow Stones

These artifacts, described by Fewkes as elbow stones,[34] (and shown in Figures 21 and 22) are found only in the Greater Antilles. Their distribution in these areas

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[32]T. A. Joyce, "Prehistoric antiquities from the Antilles, in the British Museum," Royal Anthropological Institute, Journal, London, Vol. 37, pp. 402-419, plate 50, cited by Ekholm, op. cit., p. 368.

[33]Ekholm (1961:369), cites the fact that the Antilles is the site of the discovery of many monolithic axes. These axes are stone reproductions of hafted axes, and could not possibly have been used as axes.



Figure 21. Puerto Rican elbow stones or partial "collars". The grooves for lashing these to wooden or cord waist-bands are visible at each end of the stones. (Ekholm, 1961, Fig.3, p. 362.)



corresponds closely with that of stone"collars" and three-pointed stones, which are practically confined to Puerto Rico, Haiti,Santo Domingo and possibly eastern Cuba.[35]

The examples shown in Figure 21 average about 9 inches in overall length by about 4 inches in width.

Fewkes describes elbow stones in great detail and suggests a ceremonial use for them.

Ekholm[36] describes them as partial "collars" of the slender type, "the only difference being that they were held in place by either a wooden portion that was lashed to them, thus completing the "collar", or by a cord as in our reconstruction." Ekholm's explanation is illustrated by the drawings in Figure 22.

According to the evidence produced by Rouse,[37] elbow stones and stone "collars" come from the same time period; and so it cannot be claimed that either one was the prototype of the other.

Three-Pointed Stones

These peculiar shaped stone artifacts, illustrated

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[34]J. Walter Fewkes, "Porto Rican Elbow-Stones in the Heye Museum, with Discussion of Similar Objects Elsewhere," American Anthropologists, Vol. 15, 1913, pp. 435-459.

[35]ibid, pp. 435-459. [36]Ekholm (1961), op. cit., p.363.

[37]Rouse (1951), op. cit., p. 258.

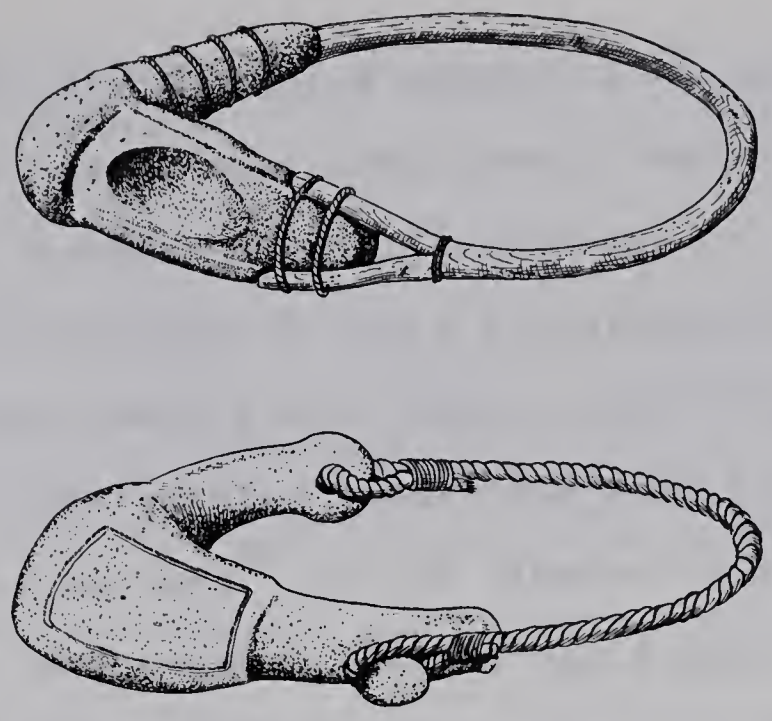


Figure 22. Elbow stones showing probable manner of completion with wooden loop (top) and heavy cord (bottom), to form a "collar" to be worn around the waist. (Ekholm, 1961, Figs. 4 and 5, p. 363.)



Figure 23.



Figure 24.

Puerto Rican Stone head or three-pointed stone; front and lateral views; 7.75 inches by 2.75 inches. (Fewkes, 1903, plate LII, b and b').



in Figures 23 and 24, are the third member of the Arawak carved stone complex. As has been mentioned, they occur together with stone "collars" and elbow stones.

Fewkes describes these in fully illustrated detail, in his monumental work dealing with Puerto Rico.[38] He suggested that the three-pointed stones may have been attached to the striking area[39] of the slender type "collars". This suggestion was very logical because the typical three-pointed stone has a concave base which corresponds with the convexity of the striking area of the "collar". As can be seen in Figure 25, these stone have bulbous ends, one the head and the other the hindquarters of an anthropomorphic animal, leaving grooves easily adapted for use in lashing them to some object, (See Figure 26).

Ekholm seems to have improved on this interpretation by suggesting that the three-pointed stones were lashed on to the wooden prototypes of the stone "collars".[40]

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[38] J. Walter Fewkes, "The Aborigines of Porto Rico and Neighboring Islands," Bureau of American Ethnology, 25th Ann. Report, Washington: Government Printing Office, 1907, p. 170ff, plates 62-69.

[39] Fewkes (1907:170) uses "undecorated area" as he was not convinced that the stone "collars" were used in the game whereas the speculation here is that they were.

[40] Ekholm (1961), op. cit., p. 370.



Figure 25. Lateral and face views of Puerto Rican three pointed stones.
Length $7\frac{3}{8}$ inches. Grooves for binding appear at each end.
(Fewkes, 1903, plate XLV, C, C').



Figure 26. Puerto Rican stone "collar"with attached three-pointed stone; greatest internal diameter $16\frac{3}{4}$ inches.
(Fewkes, 1903, plate. LXIX, a).





This explanation appears to be more logical, even if speculative, as the stone "collar" needs no addition to improve its striking power, whereas the wooden version could do with added weight and a harder striking surface.

Palmate Stones and Thin Stone Heads or Hachas

The palmate stone in figures 30 and 31, will serve as a typical example. These objects have been found in large numbers, almost without exception, in central Veracruz and the adjacent state of Puebla. They show great variation in shape and size, ranging from very tall, graceful forms to squat, rounded types.[41] Some are less than 15 cm high, others more than 80 cm.[42] Characteristic of all palmate stones is a concave base and a general concavity of the frontal area.

Based on relief carvings on the walls of the large ballcourt at Tajin, Veracruz, shown in Figure 32 it is certain that palmate stones were associated with the game

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[41]One of the best collections of reproductions of palmate stones and hachas is contained in Tatiana Proskouriakoff's "Varieties of Classic Central Vera Cruz Sculpture," in Contributions to American Anthropology and History, No. 58, Vol. XII, WashingtonD.C.: Carnegie Institution of Washington, Publication 606, 1960, pp.61-94.

[42]Proskouriakoff, op. cit., p. 81.



Figure 27.



Figure 28.



Figure 29.

Three views of a stone-feather type palmate stone from Central Veracruz. Late Classic.
Height 26cm., width 21.5cm.
(Courtesy Milwaukee Public Museum).



Figure 30.



Figure 31.

Two views of an elaborately carved palmate stone from Xiuhil near Jalapa, Veracruz, Late Classic.
Height 23cm., width 14cm.
(Courtesy Milwaukee Public Museum).











played in this region.[43] Because of their fragile nature, being sculptured in relatively, soft, brittle stone, it is difficult to conceive that they had any utilitarian purpose connected with the actual playing of a ball game.[44] It is possible that the objects depicted in the relief carvings were not actual stone palmas, but wooden palmas. Ekholm suggests that:

> . . . wooden prototypes had some actual function when worn on the belt and that the elaborate stone palmas were largely just a conventionalized form, purely ceremonial or decorative, and that the functional form was retained even after the function ceased to exist.[45]

The archeological evidence strongly indicates the use of a palma-like object in the ball game. Just how, or from what material it was made, still remains a mystery.

Hachas or thin stone heads have a much wider distribution than palmas. Most have been discovered in Veracruz, Oaxaca, and on the Pacific ccast of Guatemala. Typical examples of a hachas from Oaxaca are depicted in Figures 37 and 38. The common characteristic of these sculptures is that they represent a human head of life size or larger, when viewed from the side. They average about two inches in thickness.[46]

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[43] These relief carvings are analysed in detail by Gordon Ekholm, "Palmate Stones and Thin Stone Heads," American Antiquity, Vol. XV, No. 1, 1949, pp. 2-4.

[44] ibid, p.3. [45] ibid, p. 4. [46] ibid, p.6.

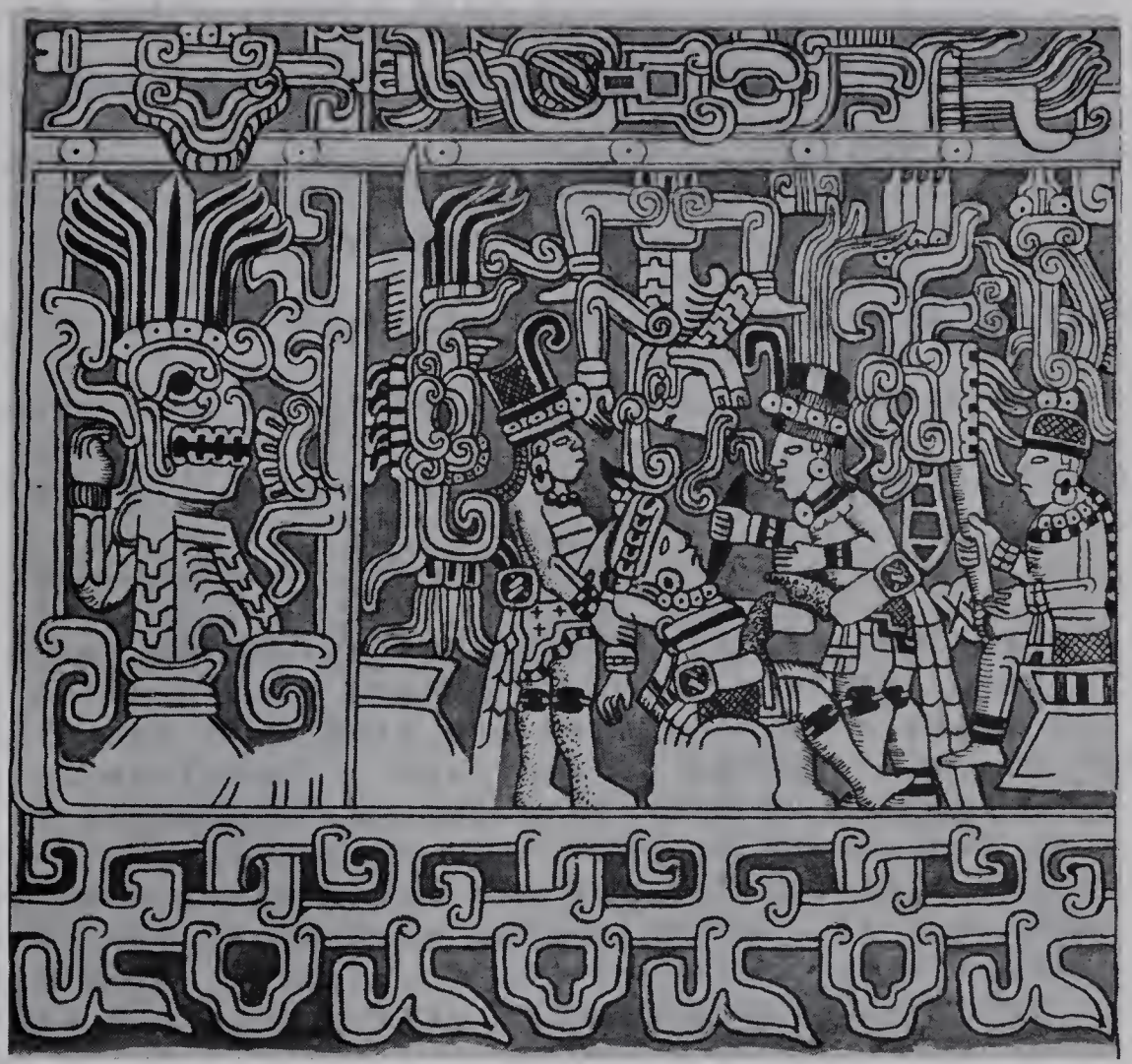


Figure 32. Carved relief panel from the ballcourt at Tajin, Veracruz. The panel represents a sacrificial scene on the ballcourt. A ball player, probably the captain of the losing team, is being killed. All three players appear to wear stone yokes, palmate stones and knee pads. (Courtesy of Milwaukee Public Museum).



Figure 33. A carved palmate stone from Xiuhil near Jalapa, Veracruz. Late Classic. Height 22cm., width 13cm. (Courtesy Milwaukee Public Museum).





Many of these hachas were obviously constructed so as to be attached to a vertical surface, for they have a definite horizontally projecting tenon at the back. Ekholm illustrates the probable method of attachment with a reproduction of a clay figurine which shows a male figure wearing a heavy yoke or belt, on the front of which a hacha is attached.[47] Commenting on the significance of the details in the figurine, Ekholm says:

> . . . let us postulate that the thin stone heads were in at least one period of their history, meant to be fastened to a belt and worn thus as a piece of ceremonial equipment. For this to be possible, we must assume, I believe, that belts of wood or perhaps of leather or basketry were used, for no stone belt or yoke has been found which has any hollows into which another object could have been tenoned. If a wooden belt were used, however, it is readily understandable how a thin stone head with a tenon could have been attached to it.[48]

Proskouriakoff produces evidence that, in the Early Classic period, hachas were thicker and heavier than those of the Late Classic period, which were very thin.[49] This may possibly mean that those of earlier times had a more utilitarian usage than those of later times, which could have served no other purpose than those of a ceremonial or symbolic nature. The same author also suggests the possibility that palmas superseded hachas in the Late Classic period.[50]

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[47] ibid, p. 6, Fig.6. [48] ibid, pp. 6-7.

[49] Proskouriakoff, op.cit., p. 79. [50] ibid.

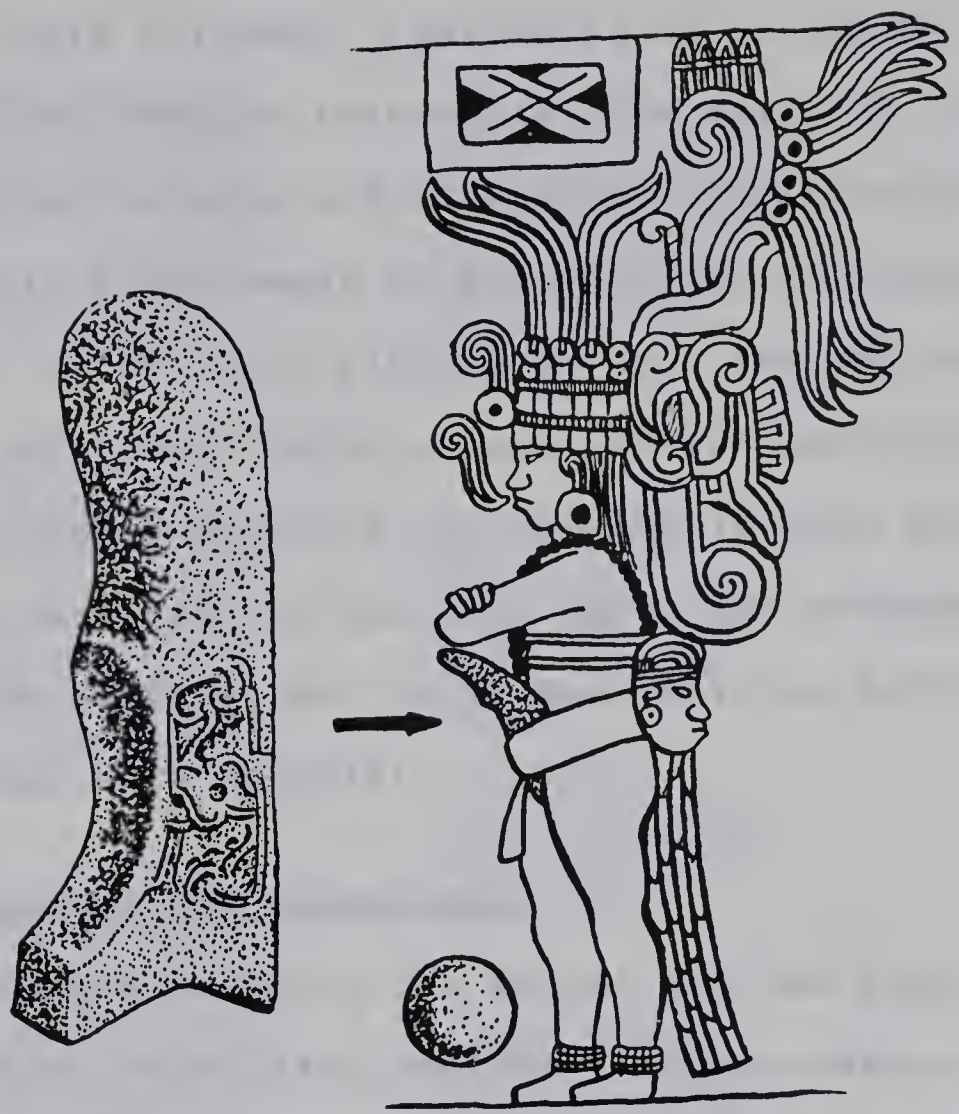


Figure 34. Ball game player wearing stone yoke, thin stone head and palmate stone. From a stone sculpture found at Vega de Aparicio, near Tajin, Veracruz.
(Courtesy of the Milwaukee Public Museum).



Figures
35 and 36.
Two views of a pottery figurine of a ball game player wearing a yoke and a palmate stone. Central Veracruz, Totanac area. Late Classic. Held in Milwaukee Public Museum.
(Photo courtesy of Milwaukee Public Museum).





The available evidence, limited as it is, gives rise to some rather tenuous inferences. The first of these is that there seems to be a definite relationship between the hachas or thin stone heads of Mesoamerica, especially those belonging to the Early Classic period, and the three-pointed stones, of a much later period, of the Antilles. Secondly, the evidence supports the hypothesis that both types of stones were used in the ball game, not attached to stone hokes or collars, but to wooden belts or belts made of some other soft material.

Gloves, Arm Wrappings and Handstones.

The eyewitness accounts for Mexico and the Mayan area, some of which were cited earlier in this chapter, mention gloves as hand protectors in the game. The Popul Vuh also mentions gloves.[51] However, an actual description of these gloves is unavailable.

A study of stone monuments, stone objects, pottery figurines, vessels and codices indicates three major types of hand protectors. They are:

(a) quilted wrappings

(b) spiral bandage-type bindings

(c) short, square protective pads.

This type of protection would be vitally necessary if players

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[51]Popul Vuh, op. cit., p. 11.



Figure 37. Thin stone heads or hachas from Oaxaca and Highland Guatemala. These have been associated with the late Classic period.
(Proskouriakoff, 1954, Fig.II, i-p).



had to dive to the hard playing floor in order to retrieve a low ball.

Borhegyi[52] has recently claimed that the so-called "stone weight," "padlock stones" and "sling stones" of ancient Mexico and Guatemala were used as ball game equipment, and describes them as ball game handstones.

Borhegyi reviews the literature and describes the handstones in museum collections which he has examined.[53] Those from the Guatemalan National University, Figure 40, he describes as varying in height from about 12 to 27 cm, in width from 13 to 24 cm, and thickness from 12 to 13 cm.[54]

The main argument for handstones as ball game equipment is that they have been discovered in frequent association with palmate stones, stone yokes and thin stone heads.

Handstones have been described as weapons of war by most authors. However, Borhegyi[55] claims that this would most certainly have resulted in chipped and broken handstones being found, but says that the available specimens

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[52]Stephan de Borhegyi, "Ball-game Handstones and Ball game Gloves," in Essays in Pre-Columbian Art and Archeology, by S. K. Lothrop and others, Harvard University Press, Cambridge, 1961, pp. 126-151.

[53]ibid, pp. 126-130 [54]ibid, p. 131.

[55]Borhegyi (f.n.58) reviews a large number of them.

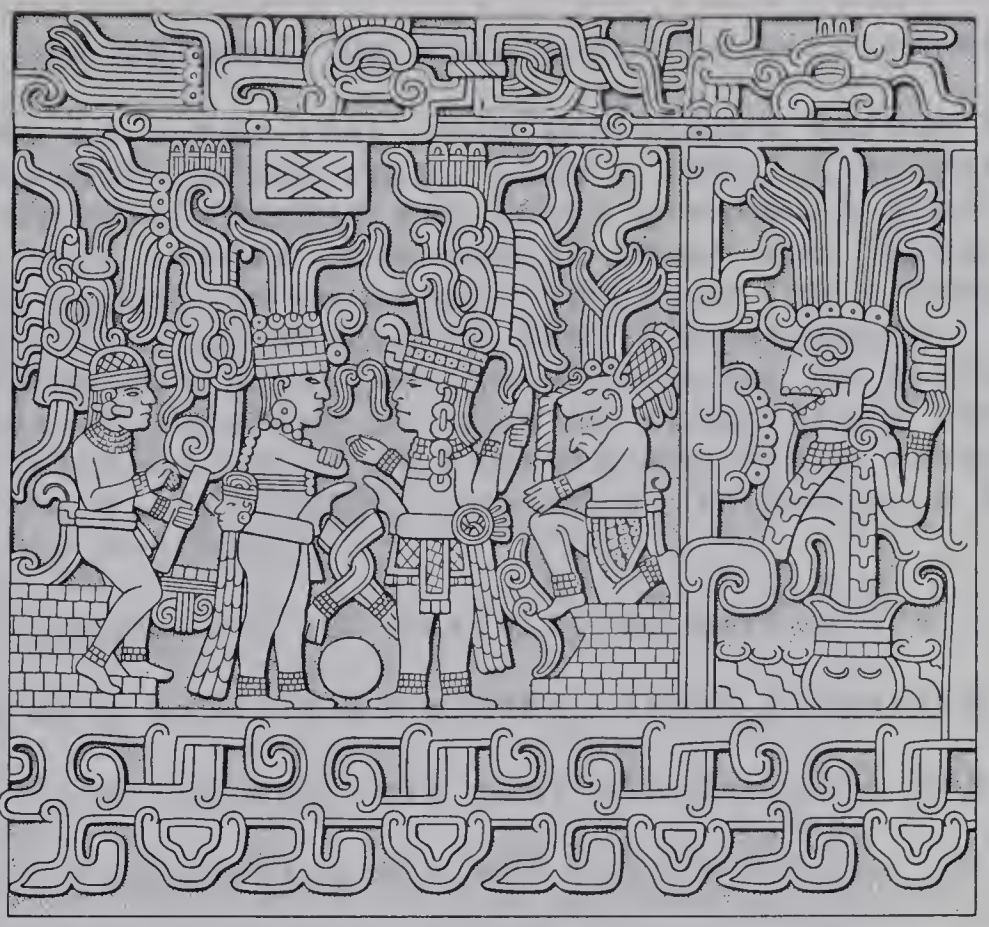


Figure 38. Panel from larger ballcourt at Tajin, Veracruz. Figures wearing yokes, palmate stones. The figure at centre-left appears to have a thin stone head attached to yoke.
(Proskouriakoff, 1954, Fig.9, b.)



Figure 39. Palmate stone from San Marcos en Tescelo, Veracruz. Depicts ball game player with ball game handstone in left hand.
(Borhegyi, 1961, Fig. 4, p. 131).





are intact and not chipped. On this point he concludes:

> It should be noted that they are absent during the Late Postclassic period (A.D. 1300 - 1500) when warfare in Middle America reached its peak. One would also doubt that such lavish carvings on human and jaguar heads would appear on an object intended for a single use as a missile, particularly when any ordinary, uncarved stone would be just as effective. In warfare the chances of recovery of such an elaborately carved stone by its owner would be limited and there would seem to be little practical advantage in having a hole carved to fit the hand.[56]

Clune[57] questioned the validity of Borhegyi's evidence. His main line of reasoning, based primarily on early ethnohistoric records, was that all accounts mention a no-contact rule concerning the use of the hands.

Borhegyi cites evidence to show that ball game handstones and their representations on stone monuments and pottery figurines are distributed from Panuco in Veracruz, to Copan in Honduras. They are not found in the rain forest sections of Tabasco, northern Chiapas, the Peten district, and British Honduras, where hand wrapping or the spiral binding method of hand and wrist protection is indicated on figurines and carvings,(See Figures 41 and 43). In some places, such as Copan and Lubaantun, there is evidence

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[56] Borhegyi, op. cit., p. 129.

[57] Francis J. Clune,Jnr. "Borhegyi's Interpretation of Certain Mesoamerican objects as Ballgame Handstones," American Antiquity, Vol. 29, No. 2, 1963, pp. 241-242.



Figure 40. Loop-handled ball-game handstones; plain, and in the form of human heads. All from the Guatemalan Highlands and held in the Guatemala National Museum. Sizes range from 27cm. to 15.5cm. in height and from 16.5 cm. to 13cm. in width. (Borhegyi, 1961, Fig.7, p.136).



of both handstones and hand wrappings.[58]

A chronological analysis of artifacts seems to indicate that ball game handstones, together with stone yokes and thin stone heads, originated in Central Verazruz and spread to other areas during Classic (A. D. 300-900) times.[59] The spiral binding or wrapping type of hand protection was possibly a lowland Maya characteristic of the Classic Period.[60]

If the two forms of hand protection - bindings and handstones - had independent origins, then it is quite likely that two different forms of competitive rubber ball games, using different rules, existed in different areas contemporaneously. The evidence of different ballcourt types between areas, cited in Chapter II, certainly supports this hypothesis.

If handstones were used in the ball game there is little way of knowing in what manner they were used. Borhegyi claims that they were used both for deflecting or striking the ball and for hand protection.

There is some indication from figurines, (See Figure 41'3') to show that hand and arm bindings were used for protection in the actual game situation. However, Borhegyi has not produced any evidence for the use of handstones in the actual game situation either for protection or as a

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[58] Borhegyi, op. cit., pp. 140-151. For sources of data see Charts 1 and 2.

[59] Borhegyi, op. cit., p. 134. [60] ibid, p. 135.

means of striking the ball. Until such evidence is produced, it is possible only to speculate on their actual purpose.

Face Masks

Examination of a number of pottery whistle figurines from Lubaantun, British Honduras, reveals representations of ball game players wearing a heavy belt (probably leather), large thigh and knee protectors, a heavily padded mitten-like hand protector and a close-fitting visor-like helmet.

Joyce (1933)[61] discusses these figurines in detail. Several of the figurines cited and illustrated in his paper are shown in Figure 43. The helmets shown on these figurines would appear to be made of leather; and cover, with the exception of the eyes, the face and head.

These masks were obviously not mere ornaments. The Popul Vuh mentions three types of headgear, namely, Yach-vach, Vach-zot, and Qaza-a-vach. Translaters agree that Yach-vach and Qaza-a-vach refer to head ornaments which probably indicated the family or rank of the individual player, but Vach-zot implies an encircling protection for the face.[62]

The figurines at Lubaantun and reference to face masks in the Popul Vuh, for the Quiche Maya area, indicates

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[61] T. A. Joyce. "The Pottery Whistle Figurines of Lubaantun," Presidential Address, Journal of the Royal Anthropological Institute of Great Britain and Ireland,



Figure 41. 1:Pottery effigy whistle from Alta Verapaz, depicting ball game player wearing knee pad and yoke. 2:Effigy jar from Santa Cruz, Guatemala, representing ball game player wearing yoke, arm wrappings and pads on both knees. 3: Pottery, effigy whistle-figurine of ball player with padded knees, arm wrappings, yoke and holding a handstone in left hand. 4: Stone monument from South Coast of Guatemala, depicts squatting ball player holding a handstone in left hand. 5: Totonac palmate stone, height 54cm., showing ball player with yoke, palmate stone, knee pad and either a handstone or protective "glove" on left hand.
(Borhegyi, 1961, Fig. 9, p.139).



a wide distribution of this piece of equipment in Southern Mesoamerica.

The early Spanish writers imply, by omission, that this type of equipment had become obsolete in late Mayan times and was not used by the Aztecs.

There is no evidence for the use of face masks in any other part of Mesoamerica, Arizona or the Antilles.

Knee Protectors

The use of padding on at least one knee has been depicted on many figurines and carvings associated with the competitive rubber ball game,(See Figures 41 and 42).

Covarrubias[63] cites a stela from Tepatlaxcom, Veracruz, which depicts a bearded ballplayer being dressed by an attendant. "He wears a knee pad and a voluminous belt, and his hand is bound by a thick cord that forms a sort of gantlet."[64] Another relief shows a ballplayer with a knee pad on one knee while the other knee appears deeply calloused, (See Figure 44).

Vol.63, 1933, pp.XIX-XXIV and plate VIII.

[62] ibid, p.xxiii.

[63] Miguel Covarrubias, Indian Art of Mexico and Central America, Alfred A. Knopf: New York, 1957, p. 183.

[64] ibid.



Figure 42. Hollow clay figure of a ball player wearing a "yoke", knee pad, arm wrappings and holding a mask. The figurine is of unknown provenance. (Covarrubias, 1957, plate XXXVIII).

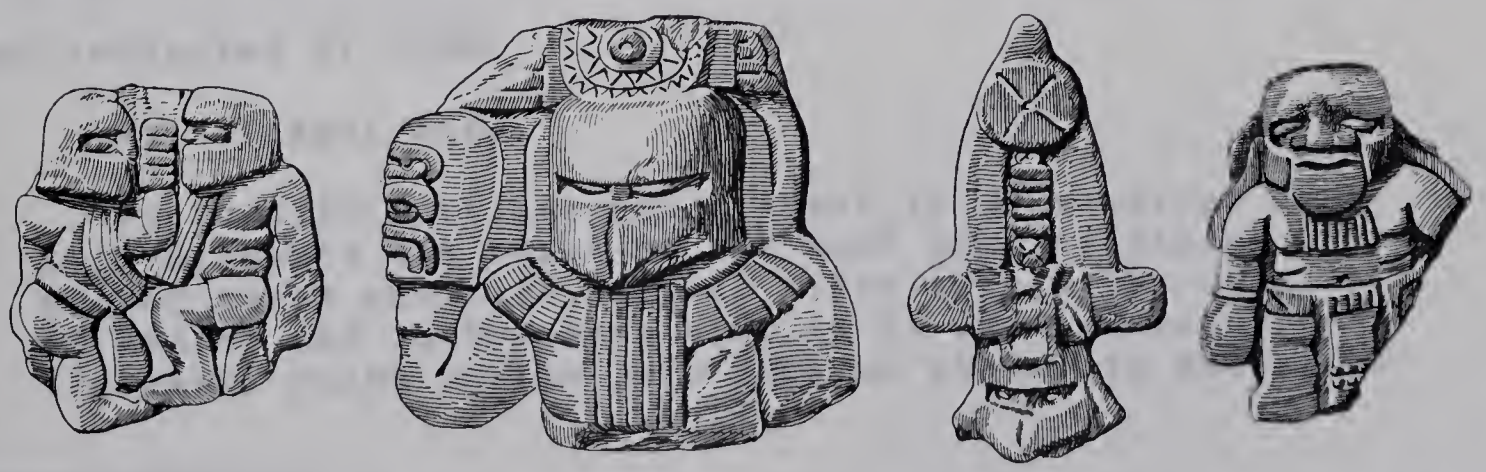


Figure 43. Pottery whistle-figurines from Lubaatun, British Honduras. Ball players depicted with masks and gloves.
(Joyce, 1933, plate VIII, figures 1-4).





Borhegyi cites a possible "knee yoke" from Guerrero. This is from the Middle or Late Pre-Classic period, and may have been tied to the players' knees for protection,[65] (See Figure 45).

If it is possible to infer from archeological evidence that the equipment depicted on figurines and carvings was actually worn in the playing of the competitive rubber ball game, then there was considerable temporal and areal variation in the type of equipment worn by players.

The tendency of many writers to rely on the use of Spanish and other early ethnohistoric records has been responsible for some misleading information in regard to playing equipment, playing techniques, rules and function of the game in different areas and periods. The eyewitness accounts are extremely limited in both areal and temporal range. They give very little indication of prior developments over centuries of time.

As Borhegyi says:

> It is difficult and conjectural to reconstruct from such accounts the rules of the ball game as played during Early and Late Classic times around the Gulf of Mexico and in the Maya area as it is to reconstruct the early rules of the polo game as played in Persia or

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[65] Stephan de Borhegyi, "A Miniature Ceremonial Ball-game Yoke from Mexico," American Antiquity, Vol.31, No.5, 1966, p.p.742-744.



Figure 44. Relief from Santa Lucia Cotzulmahuapa, South Pacific Coast. Ball player with stone "yoke", knee pad, other knee calloused. The player wears a protective glove on his left hand.
(Covarrubias, 1957, plate XLI).



Figure 45. "U" shaped, small "curved stone" called "knee yoke", from the State of Guerrero, Mexico. Private collection in New York. Height - 12cm. width - 13cm. Middle Preclassic period. (Borhegyi, 1966, Fig.2, p.743.)





India from modern polo played in the United States or Great Britain.[66]

A much more detailed analysis of archeological evidence, aided by more sophisticated dating techniques now available, will tell much more about this game than we yet know.

It is interesting to note the similarity between Mesoamerican yokes and thin stone heads,and Antillean "collars" and three-pointed stones. This similarity of probable playing equipment suggests that the game diffused directly from Mesoamerica to the Greater Antilles. Stern[67] and Alegria[68] have suggested diffusion via the Circum-Caribbean route along the north coast of South America. However, there is no evidence at all of the existence of the competitive ball game or of ball game paraphenalia anywhere along this latter route. It is therefore more logical to conclude, as Loven[69] has done, that the route of diffusion was a direct one.

Summary

The use of protective playing equipment during the

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[66]Stephan de Borhegyi, (1964) op. cit., p. 84.

[67]Stern, op. cit., p. 101.

[68]Alegria, op. cit., p. 348-349.

[69]Sven Loven, Origin of the Taino Culture, West Indies, Goeteborg: Elanders, 1935, pp. 694-695.

playing of competitive rubber ball games on ballcourts in Cental Mexico is verified by ethnohistorical records. The protective equipment of this period and area was made of leather and basketry.

Stone artifacts have been discovered at, or near, ballcourt sites, and have been associated with rubber ball games. Stone yokes, palmate stones, hachas and a knee yoke have been strongly suggested as representing players' equipment. In Mesoamerica, carvings on ballcourt walls, figurines and other pottery artifacts have provided representations of what appear to be ball game players wearing stone yokes, palmate stones, hachas, knee protectors, face masks, and arm and hand wrappings. Some figures appear to be holding handstones.

If stone equipment was ever used in rubber ball games, it was discontinued by the beginning of the Early Postclassic period, when lighter equipment was possibly substituted for the heavier, more ornate equipment.

No evidence of playing equipment has been found in Arizona. However, in the Greater Antilles a large number of stone "collars," "elbow"stones, and three-pointed stones, have been discovered at ballcourt sites. This equipment could have been used as actual playing equipment or was a replication of similar equipment constructed of wood or some other material.

Subjects actually wearing Mesoamerican stone yokes or Antillean stone"collars," have reported both comfort and only slight interference with mobility.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine evidence relating to the role and development of competitive rubber ball games in Mesoamerica, Arizona and the Greater Antilles.

The study has revealed the existence, from a very early time, of a highly organised, competitive, rubber ball game. The game was played on structural courts which varied from simple to elaborate architecture. Some courts provided spectator facilities. Methods of playing the game were variable over time and space. The popularity of the game was such that it continued to be played in Mesoamerica for more than one thousand years.

A general definition of ballcourt structures was attempted for each area. Throughout these areas, several features link ballcourt structures together as variations of the same concept; but respective differences of form, construction details, applicable data, and inferred usages, warrant a system permitting discrimination. General definitions were presented because differences occur, in particular features of structure, within all of the three culture areas.

The origin of ball games played with a rubber ball remains unsolved. Claims for South American, Circum-Caribbean

or Mesoamerican origins remain neither proven nor disproven. However, the origin of ballcourt structures in Mesoamerica is strongly supported by their antiquity in this area. Present knowledge places the origin of a rubber ball game, played on a structural court, to Monte Alban, in Oaxaca, Mexico, somewhere between A.D. 1 and A.D. 300. This type of game seems to have spread from this subarea to many other parts of Mesoamerica and Arizona. At a much later date (approximately A.D. 1300) a version of the game had diffused to the Greater Antilles.

To date, archeological evidence gives the Highland Guatemala subarea the greatest number and the densest distribution of ballcourts. The major spread of all types of ballcourts in Mesoamerica was during the Early Postclassic period (A.D. 900-1200). In Arizona the busiest period of court construction almost coincided with the Mesoamerican surge of construction, being around A.D. 1000. A much later period, namely, A.D. 1437-1500, seems to have been the peak construction period for ballcourts in the Greater Antilles.

Inventories of ballcourts discovered, to date, in Mesoamerica and Arizona were presented. Two hundred and sixty-nine Mesoamerican ballcourts were described and mapped. For Arizona, eighty-seven ballcourts were listed and described. Insufficient data from the Greater Antilles

prevented a similar inventory.

Two main hypotheses were examined. These were as follows:

1. That a number of versions of a competitive rubber ball game was played in the three culture areas.

2. That rubber ball games had a secular as well as a religious function; and that the relative importance, of one aspect over the other, varied over space and time.

The first hypotheses was supported by evidence of a variation in court types. This variation includes extreme size ranges in all dimensions; the presence or absence of rings on the side-walls; the presence or absence of end-walls; the structural difference of end-zones. Further evidence included the different types of artifacts found associated with ballcourt sites; or in some instances, namely north-west Mexico and Arizona, no evidence of artifacts which could be associated with the game.

The second hypothesis was supported by historical evidence describing versions of rubber ball games in the Greater Antilles; by archeological evidence from Hohokam sites in Arizona; by passages from the Quiche Maya Popul Vuh and the Spanish chronicler Duran, both relating to subareas in Mesoamerica.

The problems posed by limited historical records, ballcourts and artifacts cannot be solved with present

data. An examination of available evidence reveals gaps and limitations in present knowledge which should be corrected by future research. Perhaps this study has done more to pose new questions than to solve old ones. However, the approach used here and the postulated answers may serve as guides for future research.

Recommendations

1. This area has and still is, being thoroughly researched by anthropologists and archeologists. However, physical education scholars have, as yet, done little to discover the wealth of information, available in this geographic area, concerning the history of games in ancient civilizations. This writer has dealt only with rubber ball games. Evidence of other games is available and is worthy of separate investigation.

2. Fresh evidence of ballcourts and other traits associated with rubber ball games is continually being published. There is a need for replication of this study when sufficient new evidence comes to hand.

3. The influence of this game, and the rubber ball used, probably affected changes in the development of European ball games. This topic is worthy of separate study.

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APPENDIX A

1. DESCRIPTION OF MESOAMERICAN CULTURE AREA

11. DESCRIPTION OF SOUTHWEST (ARIZONA) CULTURE AREA

111. THE GEOGRAPHICAL AND CULTURAL FACTORS IN THE GREATER ANTILLES

THE MESOAMERICAN CULTURE AREA

Sources: George C. Vaillant, Aztecs of Mexico, Revised by Suzannah B. Vaillant,(Garden City, Doubleday and Co., 1962).

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Mesoamerican Area

This area begins in the south from Honduras and northwestern Costa Rica and extends northward through Mexico to Tamaulipas and Sinaloa in the north(Map 1). The area exhibits much physiographic, climatic, and vegetational variation. To the north are semi-arid mountains and high desert plateau. Southwards lies the volcanic zone of central Mexico with its upland basins and remnants of old glacial lakes, such as the Valley of Mexico. Mountain and Valley country continues through Jalisco southeastward through Oaxaca. Similarly, below the low-lying Isthmus of Tehuantepec, are the mountains, valleys, and basins of Chiapas and Guatemala. The Pacific coastal lands are relatively narrow plains which descend from mountains to the sea, but on the eastern side the Atlantic coastal plain forms a relatively wide belt of low-lying savanna and dense tropical country.

The climate of Mesoamerica is mainly tropical, although temperature and rainfall are moderated by altitude. Consequently, temperate-to-cool upland zones exist very close

to hot, humid rainforests. For the most part, the north and west are dry; and in these directions the environment becomes progressively less favourable for settlement, so aboriginal farming was limited to oasis valleys. The south and east, however, are areas of heavy precipitation; and forest and savanna country prevails. Here, agriculture was in pre-Columbian times, and still is , based on the slash-and-burn method. In the upland valleys and basins of central Mexico, the Sierra de Sur, and the highlands of Guatemala-Chiapas, adequate rainfall, temperate climate and deep, fertile soils combine to allow for intensive agriculture. In these places the aboriginal populations were most numerous in pre-Columbian times.

The Mesoamerican Cultural Tradition

The fundamental basis of this tradition was its agricultural village system. This had developed by 2000 B.C. As time went on the tradition became richer and more elaborate adding to itself new elements developed locally or imported.

Maize, beans, tomatoes, pumpkin, squash and cacao were the basic range of crops cultivated, with maize and beans forming the staple diet for most people. Cultivation methods varied from primitive, pot-hole techniques to elaborate irrigation and terracing practices.

The basis of Mesoamerican settlement was the village,

and Mesoamerican society rested on the foundation of the nuclear, or extended, family household, several of which made up such a village. These villages were organised into larger territorial units with leadership focused in ceremonial centers or politico-religious capitals.

Religion, ritual and ceremony, were of great importance in pre-Columbian Mesoamerica. Much of the grand architecture and religious sculpture and painting were religious manifestations. Hieroglyphic writing appeared somewhere during the first millennium B. C. Calendars combined astronomical, mathematical and astrological knowledge with religious beliefs and rituals. Sanctions and controls in the higher strata of Mesoamerican society were primarily religious; although as the state increased in size and power, secular and militaristic elements seem to have played an important role.

Large territorial empires possibly arose as early as 1000 B.C. It is known for a fact that such political organizations existed in the centuries immediately before the Spanish Conquest. The Aztec empire held sway over a large portion of what is now Mexico. In this empire developed a class structure with a religious-military aristocracy, a "middle class" of soldiers, public officials, merchants and artisans, and a broad base made up of the agricultural peasantry.

Mesoamerican Subareas

Despite the many common bonds mentioned above, there was considerable cultural diversity within the Mesoamerican culture tradition and within its area.

Though there is no over-all, matching correspondence between language groups, certain partial and significant correspondences did exist. These are best summed up into ten Archeological subareas which divide the larger Mesoamerican area.

1. The Maya Highlands (upland Guatemala and Chiapas and the bordering Pacific coasts) is and was the home of Maya speaking peoples, the Uto-Aztecan-speaking Pipil, and other smaller groups.
2. The Maya Lowlands (lowland Chiapas, most of Tabasco, lowland Guatemala, the Yucatan Peninsula, British Honduras, and a western fringe of Honduras) is and was the home of Maya-speaking tribes, the area in which the Classic Maya civilization prospered.
3. The Southern Periphery (most of western Honduras, Salvador, and the Pacific coastal strip of Nicaragua and southern Costa Rica) is a subarea occupied by diverse language groups including the Maya.
4. Southern Veracruz-Tabasco (the southern third of the former and the adjacent strip of the latter)

was the original source of the Olmec art style and related archeological culture of the Preclassic Period. At the time of the conquest the inhabitants, presumable unrelated to the earlier peoples, were mainly of Uto-Aztecan linguistic stock.

5. Oaxaca (the present Mexican state) was the homeland of the Zapotecs and the Mixtecs and the center of Monte Alban civilization.
6. Guerrero (that Mexican state) where local art styles suggest its long cultural independence and separation from other Mesoamerican subareas. The people were mainly of Mixtec linguistic stock.
7. Central Mexico (the Valley of Mexico, eastern Estado de Mexico, southern Hidalgo, Tlaxcala, Puebla and Morelos) was the seat of the great Teotihuacan civilization in earlier times and the nucleus of Toltec and Aztec power later. Nahuatl was the principal language of the Conquest period.
8. Central Veracruz (coast and interior of the present state) is known for its Tajin art styles and stone artifacts which have been associated with the rubber ball game. This was the territory of the Totonac nation during the sixteenth century.
9 The Huasteca (the coast and interior of northern Veracruz and southern Tamaulipas and part of

Hidalgo) was the territory of the Maya-speaking Huastecs.

10. The West and the Northern Frontier (embraces all of semi-arid and mountainous Mexico to the west and northwest of the Central subarea, extending to the Pacific coast to include Sinaloa and Nayarit) is a subarea of relatively lower cultural development than the others. It appears that much of the culture tradition of this subarea was derived from the south and east. Most of the tribes were Uto-Aztecan speaking.

Major Periods

The history of Mesoamerican tradition may also be segmented by division into major chronological periods. These periods (some of which are included in Table 1, p.20) are conceived as strictly horizontal time divisions, which adhere to absolute dating as far as this is possible. However, the salient cultural characteristics of the periods do not always coincide with strictly horizontal time divisions. The absolute dating is keyed to the Maya Long Count native calendar and to the archeological sequences dated by that calendar in the Maya lowland subarea. The correlation of that calendar with the Christian calendar follows the Goodman-Martinez-Thompson system (see Willey; 1966, p. 136). This extension of the Maya native calendar pertains, primarily,

to the Classic Period, during which time this calendar was in use. Postclassic period dating estimates follow automatically from this. For periods prior to the Classic, radiocarbon test results are used for absolute time estimates. Finally, stratigraphy, and typological cross-dating have been employed in plotting the interrelationships of local, regional, and subareal sequences.

The five major periods which cover man's occupation of Mesoamerica are listed below. The first two antedate the Mesoamerican cultural tradition and the history of ballcourts; the last three pertain to that tradition and the adoption of the ballcourt trait.

1. The Paleo-Indian Period (before 7000 B.C.). This period pertains to those early complexes of the late Pleistocene which were characterized by hunting subsistence patterns.
2. The Food-Collecting-Incipient Cultivation Period (7000 B.C. to 2000 B.C.).This period pertains to those Desert tradition cultures in which subsistence depended primarily on wild-plant collecting;but also the birth of plant cultivation. To date there is no evidence of other cultural traditions in the Mesoamerican area at this time.
3. The Preclassic Period (2000 B.C. to A.D. 300). This period includes the beginnings and early development

of the Mesoamerican cultural tradition and its agricultural subsistence patterns. In certain regions, however, cultures of the generally earlier Desert tradition persisted for a few centuries after 2000 B.C. This period has been called variously "Archaic," "Formative," and "Middle Cultures." It is usual to divide this period into three parts: Early Preclassic, (2000-1000), Middle Preclassic (1000-300 B.C.), and Late Preclassic (300 B.C. - A.D. 300).

4. The Classic Period (A.D. 300-900). This period relates, particularly, to those civilizations in the central and southern parts of the Mesoamerican area which enjoyed an aesthetic, architectural, and intellectual flowering at this time. This type of development does not appear to have occurred in the contemporary cultures of the northern part of the area. A subdividing line, between Early and Late Classic is conventionally set at A.D. 600.

5. The Postclassic Period (A.D. 900-1520). This period pertains principally to those civilizations which arose following the collapse of the Classic Period civilizations; this collapse, however, did not occur simultaneously throughout

Mesoamerica. It is now apparent that this period began in ca. A.D. 700 in central Mexico and not until ca. A.D. 900 in southern parts of Mesoamerica. Strictly speaking then, a range of ca. 700 to 900 A.D. must be given for the beginning of the Postclassic period in general.

In 1521 Cortez destroyed Tenochtitlan and the Aztec state. Soon afterward, the other Late Postclassic period civilizations fell to the Spaniards; so that by the mid-sixteenth century, Mesoamerica had, indeed, become "New Spain". Although many elements of the old native culture continued after the Spanish Conquest, including the agricultural complex items of technology and many elements of religious beliefs, the Mesoamerican tradition, as an integrated cultural tradition, did not survive. Changes had occurred during Pre-Columbian times, but none obliterated the patterns and values in the way that the European Conquest did. After the conquest only fragments survived, and native peoples began the tedious task of reassembling these fragments into the mestizo societies and cultures of today.

SOUTHWEST (ARIZONA) CULTURE AREA

Sources: John C. McGregor, Southwestern Archeology, 2nd Ed., (Urbana:University of Illinois Press, 1965).

Gordon R. Willey, An Introduction to American Archeology, Vol.1, (Englewood Cliffs, Prentice Hall, 1966), Chapter 3.

Arizona is usually included in the Southwest area, with New Mexico, as a convenient archeological area. The study of rubber ball games on structural courts has been limited to Arizona, where all courts with one possible exception are found.

The cultural history of this area is closely related to the Mesoamerican hearth of agriculture.

The climate of the Southwest is dry. The rainfall pattern tends to divide into a relatively long winter season of intermittent rains, or mountain snow, and a short season of summer thundershowers. These periods are separated by marked dry seasons.

The Subareas

Four major cultural subareas are commonly listed for the Southwest. These are, broadly, Mogollon, Hohokam, Anasazi and Patayan. However, only the first two are relevant to this study.

The Mogollon subarea runs diagonally from north-central Arizona, south-eastward into New Mexico and then southward into Chihuahua (Mexico). It is, in general, an environment of mountains and valleys, covered with dry grasslands in places and coniferous forests in others. The climate is mild.

The Hohokam subarea includes the desert of central and southern Arizona and adjacent Mexican Sonora. This subarea is much lower than the Mogollon subarea, is less rainy, and is intensely hot during summer. It can be described as

"succulent desert" country, a term which means that there is some scrub bush cover and that water is more plentiful than in extreme desert regions.

The Southwestern Tradition

Southwestern culture arose from the ancient Desert culture to the north in Utah and Nevada. It appeared at about the beginning of the Christian era as a culmination of a series of events which had begun long before. These events were the introduction of cultivated food plants from Mesoamerica, a gradual increase in community population size, more settled living and finally the introduction of pottery.

Prior to 400 A.D. the Southwestern cultural tradition consisted of small village societies in the process of creating a new way of life by synthesizing Mesoamerican and Desert tradition elements.

In the beginning of this period of progress the Southwest became an area of dense and sedentary populations relative to surrounding areas. Agriculture grew more important. Farmers irrigated, trapped silt and flooded their lands. Harvested crops were stored in special pits or in granaries. In addition to agriculture, however, hunting and plant collecting always remained of some economic importance. The only domesticated animals were the turkey and the dog.

It seems that Hohokan and Mogollon society was weakly stratified, unlike Mesoamerican society of the Classic

or Late Postclassic periods. However, social organisation was such that community projects such as irrigation works, great Kivas and ballcourts could be undertaken successfully. Militarism was not a significant institution. Human sacrifice was not practised.

THE GEOGRAPHICAL AND CULTURAL FACTORS IN THE GREATER ANTILLES

Sources: J. Walter, Fewkes, "The Aborigines of Puerto Rico and the Neighbouring Islands." Bureau of American Ethnology, 25th Annual Report, (Washington: Government Printing Office, 1907)

Irving Rouse, "Areas and Periods of Culture in the Greater Antilles," Southwestern Journal of Anthropology, Vol. 7, Albuquerque, 1951, pp. 248-265.

The Greater Antilles forms part of a partially submerged continental tract which once extended continuously from Cuba to the Virgin Islands. They are transversed by an abrupt, high mountain range, some peaks rising to nearly 12,000 feet, culminating in Hispaniola and falling away on either side in Cuba, Jamacia and Puerto Rico.

Rainfall is abundant in most parts of the Greater Antilles. Vegetation in pre-Spanish times must have covered the islands right to the water's edge; except perhaps the south-east coast of Cuba, which is a dry, xerophytic-shrub region.

Three culture groups inhabited the Greater and Lesser Antilles, at the time of Spanish discovery; namely

Ciboney, Arawak and Carib. Very little is known of the Ciboney. When the Europeans came in the sixteenth century the Ciboney were few in number and the Spanish made very little contact with them before they became extinct. They are believed to have been primitive hunters, fishers and gatherers.

The Arawak occupied most part of the Greater Antilles at the time of historic contact. They depended mainly on agriculture for their livelihood, and resided in permanent villages. Their sedentary existence is exemplified by their well advanced pottery -making skills.

The Caribs were a warlike race, and practiced cannibalism. Fishing was their primary occupation, although they also practised a form of shifting agriculture. They lived in temporary villages and had less of an interest in religion than the Arawaks. Their leaders were chosen for their prowess as warriors. By A.D. 1492 the Caribs had occupied most of the Lesser Antilles and had spread westward as far as a small island, off the east coast of Puerto Rico, from where they organised raids on the Arawak of the Greater Antilles.

Arawak Periods and Areas

It is only amongst the Arawak that we find rubber ball games being played on structured ballcourts.

After migrating from the Orinoco region of South America the Arawak passed through three main periods of development : (1) an early period from A.D. 929-1193, when these peoples first settled the Lesser Antilles, Virgin Islands and Puerto Rico, bringing with them pottery and agricultural implements, but not the ceremonial complex of historic times, (2) a middle period from A.D. 1193-1437, when they spread into the remainder of the Greater Antilles. During this movement they made contact with the Ciboney; and some acculturation occurred, particularly changes in the ceremonial complex, (3) a late period, A.D. 1437-1584, which saw the development of a new ceramic complex and more stable social organisation. It was during this period that most of the datable ballcourts and other ceremonial structures and artifacts of the Greater Antilles are associated. The Dominican Republic (Hispaniola) and western Puerto Rico are the most prolific areas for these structures and artifacts.

Both pottery styles and ceremonial complexities appear simpler the farther one moves east and west from its center in western Puerto Rico and the Dominican Republic. Stone "collars," elbow stones, and three-pointed stones, for example, are limited mainly to the center, while ballcourts and other ceremonial structures become less common with distance from this central area.

Surveys of Puerto Rico have indicated that in the early period the Arawak occupied the coastlands only. It was not until about A.D. 1300 that they had penetrated the interior. Only by A.D. 1450-1500 did the population of the interior surpass that of the coastal strip.

APPENDIX B

1. INVENTORY OF MESOAMERICAN BALLCOURT SITES

11. INVENTORY OF BALLCOURTS IN ARIZONA

TABLE V1

INVENTORY OF MESOAMERICAN BALLCOURT SITES.#

No.	Site	Location*	Period	No.of courts	Type+
1.	Kaminaljuyú	HG	Late Classic	12	p
2.	Agua Caliente	"	"		p
3.	Amatitlan	"	"	2	p
4.	Aycinena	"	"		p
5.	Balsamo	"	"		p
6.	Castillo	"	"		p
7.	Chinautla	"	Late Postclassic		E
8.	Clara	"	Late Classic		p
9.	Colonia Abril	"	"		p
10.	Conceptión	"	unk.		p
11.	Cotio	"	Late Classic		p
12.	Cristina	"	"		p
13.	Cruz	"	"		p
14.	Eucaliptus	"	"		p
15.	Falda	"	Early Classic and Late Preclassic		p
16.	Fuentes	"	Late Classic		p
17.	Garland	"	"		p
18.	Guacamay	"	"		p
19.	Lavarreda	"	unk.		p
20.	Palmita	"	Late Classic		p
21.	Pelikan	"	Late Classic		p

TABLE VI (Continued)

No.	Site	Location*	Date	No. of courts	Type+
22.	Villanueva	HG	Early Classic and Late Classic		p
23.	Taltic	"	Late Classic		p
24.	San Rafael	"	"		p
25.	Sanja	"	Early Classic and Late Classic		p
26.	Rose	"	"		p
27.	Vuelta Grande	"	unk.		p
28.	Antigua	"	unk.		unk.
29.	Florencia	"	Early Classic and Late Classic		p
30.	Los Terrenos	"	Early Postclassic		p
31.	Cemeterio	"	Early and Late Classic		p
32.	Cerritos	"	"		p
33.	Uaxactún	Petén	593-889 A.D.		OE
34.	Iximche	HG	Historic	2	E?
35.	Asunción Mita	"	Early Postclassic	2	I,E
36.	Ceiba Grande	Veracruz	unk,		p
37.	Tikal	Petén	Early-late Classic		OE
38.	Becan	Campeche	unk.		OE
39.	Calakmul	Campeche	249-730 A.D.		OE
40.	Middle Motagua	Guat.	Late Classic Early Postclassic	6 3	I E
41.	Guaytan	HG	Late Classic Early Postclassic	1 1	I E

TABLE VI (Continued)

No.	Site	Location*	Date	No.of Courts	Type+
42.	Cobá	Quintana Roo	609-732 A.D.	2	OE
43.	Chichén Itzá	Yucatan	Early Postclassic	1	OE
			" "	4	I
			" "	3	E
				1	unk.
44.	Uxmal	Yucatan	Late Classic		E
45.	Tonina	Chiapas	unk.		E
46.	Yaxchilán	"	514-771 A.D.	1	OE
			unk.	1	I
47.	Desconsuelo	"	unk.		I
48.	Sayil	Yucatan	unk.		I
49.	Uaxac Canal, Ventana Group	HG	unk.	1	I
				1	OE
50.	Chacula	"	unk		OE
51.	Kash-Uinik	Brit.Hon.	unk.		p.
52.	Leon de Piedra	El Salvador	unk.		unk.
53.	Giengola	Oaxaca	Early Postclassic		E
54.	Zaculeu	HG	Late Postclassic		I
55.	Tanam Soldedad	Chiapas	unk.		OE
56.	Lubaantún	Brit.Hon.	Late Classic		OE-a
57.	Tenam Rosario	Chiapas	unk.		OE-a
58.	San Jose	Brit.Hon..	800-987 A.D.		OE
59.	El Resguardo Utatlan	HG	Late Classic 2 Late Postclassic		E
60.	Monte Alban	Oaxaca	Late Preclassic Early Classic Late Classic		E

TABLE VI (continued)

No.	Site	Location*	Date	No.of Courts	Type+
61.	Yagul (near Tlacolula)	Oaxaca	Late Preclassic Early Classic Late Classic		E
62.	Tenochtitlan	Mexico,D.F.	Contact	2	E
63.	Xochicalco	Morelos	Late Classic	3	E
64.	Copan	Honduras	514-775 A.D.		OE
65.	La Union	Honduras	Early Classic		OE
66.	Quirigua	HG	692-810		OE
67.	Yucunadahui	Oaxaca	Late Classic		E
68.	Tajin	Veracruz	Early Postclassic	8	OE
69.	Amapa	Nayarit	Early Postclassic		E
70.	Toluquilla	Querétaro	unk,	2	OE
71.	Ranas	Querétaro	unk.	5	OE
72.	Chicol	HG	Early and Late Classic		OE
73.	Piol	HG	unk.		I
74.	Xetenan	HG	unk.		I
75.	Huitchen	HG	Late Classic Late Postclassic		OE-a
76.	Chalchitan	HG	Early Classic Late Classic	1 1	OE OE-a
77.	Chutixtiox	HG	Late Postclassic		E
78.	Xolchun	HG	Late Postclassic		E
79.	Chuitinamit	HG	Early and Late Classic		I
80.	Comitancillo	HG	Late Postclassic		E
81.	Pacot	HG	Late Postclassic		E

TABLE VI (Continued)

No.	Site	Location*	Date	No.of courts	Type+
82.	Xolchun	HG	Late Classic Early and Late Postclassic		OE
83.	Rio Blanco	HG	Late Preclassic Early Classic Late Postclassic		OE
84.	Chuchun	HG	Late Classic		OE
85.	Xolpacol	HG	Late Postclassic		E
86.	Xecataloj	HG	unk.		OE
87.	Vitenam	HG	unk.		OE
88.	Tixchun	HG	Early Postclassic		OE-a
89.	Huil	HG	ink.		OE-a
90.	Oncap	HG	Late Postclassic		OE-a
91.	Caquixay	HG	Late Classic and Late Postclassic		OE-a
92.	Tuchoc	HG	unk.		OE-a
93.	Acihtz	HG	Late Postclassic		OE-a
94.	El Tigre	HG	unk.		OE
95.	Vivaceval	HG	Late Postclassic		E
96.	Mutchil	HG	unk		OE-a
97.	Tzicuay	HG	Early Late Classic Late Postclassic		I
98.	San Francisco del Morte	HG	unk.	2	OE-a
99.	Chipal	HG	Late Postclassic		OE-a
100.	Pulai	HG	unk.		OE
101.	La Lagunita	HG	Early Postclassic	2	OE,p?
102.	Pantzac	HG	Early Postclassic	1 1	Oe-a I

No.	Site	Location*	Date	No. of courts	Type+
103.	Patzac	HG	Late Classic Late Postclassic	1 1	I E
104.	Llano Grande	HG	Late Classic		I
105.	Chuitinamit	HG	unk.		E
106.	Chijolm	HG	Late and Early Postclassic		OE
107.	Tampoma	HG	Late Classic		OE-a
108.	Chichén	HG	Preclassic, through Early Postclassic	2	OE
109.	Mixco Viejo	HG	Late Classic and Late Postclassic	2	E
110.	Middle Río Palsas	Michoacan	unk.		unk.
111.	Costa Grande		unk.		unk.
112.	Potrere de los Manueles	Guerrero	unk.		E
113.	Potrere de Garcia	Guerrero	unk.		E
114.	Pandacuarere	Guerrero	unk.		OE
115.	Petetlan	Guerrero	unk.		unk.
116.	Sotolitos	Durango	Early Postclassic		unk.
117.	Schroeder site	Durango	Late Classic		unk.
118.	Jiquilpan	Michoacan	Early Postclassic		unk.
119.	Casas Grandes	Chihuahua	Early Postclassic		E?
120.	San Luis	Oaxaca	Late Classic		E
121.	Tepoztlan	Morelos	Early Postclassic		unk.
122.	Tual	Hidalgo	Early Postclassic	2	E

TABLE VI (Continued)

No.	Site	Location*	Date	No. of Courts	Type+
123.	Piedra Parada	Oaxaca	Preclassic		OE?
124.	San Pedro Pinula	HG	Late Classic	1 1	E p
125.	San Agustin Acasaguastlan	HG	Late Classic		E
126.	Finca Pomeya	HG	Preclassic through Early Postclassic		OE
127.	Piedras Negras	Peten	Before 662 A.D. After 662 A.D.	1 1	OE OE
128.	Uxul	Campeche	Late Classic		OE
129.	Rio Pec	Campeche	unk.	2	OE
130.	Balakbal	Campeche	Early Classic		OE
131.	Poer es Nada	Quintana Roo	unk.		OE
132.	Naachtun	Campeche	Early, Late Classic		OE
133.	Tenampua	Honduras	unk.		OE
134.	Cancuen	Petén	785-800 A.D.		OE
135.	Laguan de Moctexema	Tamaulinpas	610 A.D. $\pm$ 105		OE
136.	Chinkultic	Chiapas	590 A.D.		OE
137.	Tenam Puente	Chiapas	unk.	2	unk.
138.	Monteria Vieja de Dolores	Chiapas	unk.		1
139.	Metlaltoyuca	Puebla	unk.		OE
140.	Yohaullichan	Puebla	unk.		OE
141.	Palenque	Chiapas	638-785 A.D.		OE
142.	Nebaj	HG	Late Postclassic	2	OE OE-a

TABLE VI (Continued)

No.	Site	Location*	Date	No. of Courts	Type+
143.	Etzná	Campeche	Late Classic		OE
144.	Moxviquil	Chiapas	Late Classic		E
145.	Atzompa	Oaxaca	Late Classic		E
146.	Tilantongo	Oaxaca	Late Classic		E
147.	Loma Del Carmen	Oaxaca	unk.		unk.
148.	Cerro Bobo	Oaxaca	unk.		unk.
149.	Santa Lucia Cotxumalhuapa	HG	Late Classic		E
150.	Altar de Sacrificios	HG	Early Classic	2	OE?
151.	San Juan Ixeaquixtla	Puebla	unk.		unk.
152.	Texmelincan	Guerrero	unk.	3	unk.
153.	Tuel	Zacatecas	unk.		unk.
154.	Teocaltitlan	Jalisco	unk.		unk.
155.	El Pyramide	Sinaloa	Late Postclassic or historic		unk.
156.	Hochob	Campeche	unk.		OE.
157.	Huaxteca	San Luis	unk.		OE.
158.	San Francisco	Chiapas	Late Classic and Early Postclassic		OE
	La Poblason	Chiapas	Late Classic or Early Postclassic		I
	Laguna Francesa	Chiapas	Preclassic Late Classic Early Postclassic		I
159.	Colonia Tierra Blanca	Chiapas	Late Classic or Early Postclassic	2	I

TABLE VI (Continued)

No.	Site	Location*	Date	No. of Courts	Type+
	San Caralampio	Chiapas	Late Classic		OE
	San Felipe	Chiapas	unk.		OE
160.	Las Posadas	Chiapas	unk.	1	OE
				4	unk.
161.	Jocote	Chiapas	Pre-and Late Classic		OE
	Espala	Chiapas	unk.		OE
	San Antonio Playa Grande	Chiapas	Late Preclassic through Contact		OE
	La Campana	Chiapas	Classic?		unk.
162.	Yerba Puena Group A	Chiapas	Late Classic		E
	Na Palam	Chiapas	Early Postclassic	1	E
				1	E?
	CV-1	Chiapas	Late Classic or Early Postclassic		E
163.	Cerro de Ecatepec (CV-38)	Chiapas	unk.		E?
164.	Copanaguastla	Chiapas	Late Postclassic		OE?
165.	CV-10	Chiapas	unk.		E
166.	Santo Ton (CV-25)	Chiapas	Late Classic		E
167.	San Luis	Chiapas	Late Classic		OE
	La Angostura	Chiapas	Late Classic	2	OE?
	Ruiz	Chiapas	Early Postclassic		E
168.	Veracruz II	Chiapas	Late Classic Early Postclassic	2	OE
169.	La Honradez	Petén	Late Classic		OE
170.	Chochkitam	Petén	unk.		OE

No.	Site	Location*	Date	No.of Courts	Type+
171.	(not used)				
172.	Cahal Pichik	Brit.Hon.	unk.		OE
173.	Hatzxap Ceel	Brit.Hon.	Late Classic and Late Postclassic		OE
174.	(not used)				
175.	San Clemente	Peten	unk.		OE?
176.	Yaxha	Peten	unk.		OE?
177.	Pueblo Viejo Quen Santo	HG	unk.		E
178.	Ake	Yucatan	unk.		OE
179.	Chichel	HG	unk.		OE-a
180.	Los Llanitos	El Salvador	Early Postclassic		I
181.	Camp 6	Brit.Hon.	unk.		unk.
182.	Kalamte	HG	unk.		OE-a
183.	(not used)				
184.	Cihuatan	El Salvador	unk.		E
185.	San Francisco	El Salvador	unk.		unk.
186.	Tazumal	El Salvador	Early Postclassic		unk.
187.	Travesia	Honduras	unk.		unk.
188.	Cuja	HG	unk.		OE
189.	Manzanilla	Puebla	Early Classic	2	I

Total sites - 197 Total courts - 269

*HG= Highland Guatemala I = Intermediate, E= enclosed

+ - p= palangana, OE= open end, OE-a= open end -a.

(#= Adapted from Clune 1963: 212-221).

TABLE VII

INVENTORY OF SITES WITH BALLCOURTS IN ARIZONA : LOCATIONS, DATES, DIMENSIONS.*

Inventory Number	Site Name or Museum file Number+	Date:(A.D.)	Overall Length	Length of Playing Surface	Overall Width	Width of Playing Surface
1.	Wupatki Pueblo	1120-1150	30.3m		18.3m	
2.	NA 804 (MNA)	1070-1120	36.6m	28.7m	18.3m	15.0m
3.	Cedar Ridge	1070-1120				
4.	Winona Village	1070-1120	31.2m	28.1m	24.4m	14.7m
5.	NA 3254 (MNA)	1070-1120	32.4m		18.3m	
6.	Ridge Ruin	1070-1120	40.0m	32.6m	28.5m	17.4m
7.	NA 3287 (MNA)	1070-1120	38.5m	30.8m	28.5m	15.5m
8.	Clear Creek	900-1100	33.0m		23.8m	
9.	Verde River	900-1100	34.5m		25.0m	
10.	Verde River	900-1100	64.1m		26.5m	
11.	Doney Park		91 ft.			
12.	Sacred Mt.	1125	32.0m		23.8m	
13.	Watters' Ranch	900-1100	30.5m		16.5m	
14.	NA 4643 (MNA)	900-1100				

TABLE VII (Continued)

Inventory Number	Site Name or Museum File Number+	Date:(A.D.)	Overall Length	Length of Playing Surface	Overall Width	Width of Playing Surface
15.	Tapco	900-1100				
16.	Coon's Ranch		90 ft.		45 ft.	
17.	NA 6292 (MNA)					
18.	Jones' Ranch					
19.	Prescott 6:7 (GP)					
20.	Prescott 6:9 (GP)					
21.	Rock Ballcourt	600- 700		26.0m		14.5m
22.	Arizona T:14:14 (ASM)	900-1100		24.0m		16.0m
23.	Arizona T:14:15 (ASM)	900-1100		23.7m		9.5m
24.	Arizona T:16:9 (ASM)	900-1100				
25.	Citrus Site	900-1100		60.0m		38.0m
26.	Adamsville	900-1100		18.2m		10.3m
27.	Pueblo Frande	1100-1150	85 ft.	82.5 ft	41 ft.	37.6 ft.
28.	Arizona U:9:2 (PG)					
29.	Casa de Mesa					
30.	Pueblo de Lehi		45.7m			

TABLE VII (Continued)

Inventory Number	Site or Museum File Number+	Date :(A.D.)	Overall Length	Length of Playing Surface	Overall Width	Width of Playing Surface
31.	Pueblo Maroni					
32.	Pueblo del Monte		a)60 ft. b)32.0m		b)22.8m	
33.	Los Muertos		30.4m		15.2m	
34.	Pueblo Viejo					
35.	Arizona T:11:1 (PG)					
36.	Arizona T:16:2 (PG)					
37.	Sears' Verde Ranch		130 ft.		124 ft.	
38.	Citrus Site					
39.	Villa Buena					
40.	Villa Buena					
41.	Villa Buena		110.0m	67.2m	27.4m	19.8m
42.	Arizona T:12:4 (PG)					
43.	Arizona T:12:4 (PG)					
44.	St. Luke's Hospital					
45.	Snaketown	900-1150	25.0m	22.7m	15.0m	10.6m

TABLE VII (Continued)

Inventory Number	Site Name or Museum File Number+	Date:(A.D.)	Overall Length	Length of Playing Surface	Overall Width	Width of Playing Surface
46.	Snaketown	600-900	120.0m	86.25m	33.0m	18.75m
47.	Higley					
48.	Arizona U:9:28 (PG)					
49.	Casa Blanca		119.0m			
50.	Pinkley's 3rd. Site			59 ft.		33 ft.
51.	Gila Butte 5:39 (GP)		200 ft.		79 ft.	
52.	Gila Butte 5:41 (GP)		100 ft.		77 ft.	
53.	Gila Butte 5:13-18 (GP)		210 ft.		100 ft.	
54.	Gatlin Site	800-1000		a) ca. 33.0m b) 33.0m		a) ca. 11.2m 11.2m
55.	Brandes No. 1	600-800	90 ft.		56 ft.	
56.	Brandes No. 2,3					
57.	Stove Canyon Site	1100-1150		23.5m		9.75m
58.	Flieger Site	1000-1150				
59.	San Xavier Court					
60.	Casa Grande 9:5 (GP)		60 ft.		35 ft.	
61.	Gila Butte 3:1 (GP)					

TABLE VII (Continued)

Inventory Number	Site Name or Museum File Number+	Date:(A.D.)	Overall Length	Length of Playing Surface	Overall Width	Width of Playing Surface
62.	Sacaton					
63.	Sacaton 2:1-4 (GP)					
64.	Sacaton 2:7 (GP)					
65.	Signal Peak 8:2 (GP)					
66.	Tres Alamos Village	900-1100	57.9m	51.7m	22.8m	
67.	Arizona BB:15:3 (AF)	1100-1150	110 ft.	86.5 ft.	60 ft.	44.2 ft.
68.	San Simon Village	1000		20.0m		11.25m
69.	Redington	800-900	27.4m		12.2m	
70.	Kervin		72 ft.		48 ft.	
71.	Casa Grande National Monument	900-1150	38.2m	24.8m	24.4m	14.1m
72.	Romero Canyon		50.0m			
73.	Florence 4:3 (GP)		118ft.		100 ft.	
74.	Florence 5:1 (GP)		35 paces		22 paces	
75.	Hodges' Site	600-900		31.0m		21.0m
76.	Los Morteros	900-1100	74.0m	49.0m	42.1m	15.0m
77.	Animas Peak		45.0m	40.0m	18.5m	12.0m

TABLE VII (Continued)

Inventory Number	Site Name or Museum File Number+	Date: (A.D.)	Overall Length	Length of Playing Surface	Overall Width	Width of Playing Surface
78.	Martinex Peak		150 ft.		60 ft.	
79.	Eden	900-1100	32.0m		20.0m	
80.	Kearney		20.0m		14.0m	
81.	Gila Butte 3:7 (GP)					
82.	Arizona J:12:5 (GP)		225 ft.		100 ft.	
83.	Buena Vista		15.0 m		10.0m	
84.	Arizona CC:15:1 (ASM)		40.0m		20.0m	
85.	Kuykendall Site		72.5m	65.0m	22.0m	10.0m

Total Sites : 85 Total Courts : 87

*(Adapted from R.Kelly, 1963, Tables 5,6 and 7, pp. 99-116)

+ The museum file numbers are those taken from the files of the following institutions: (ASM) : Arizona State Museum

(GP) : Gila Pueblo

(PG) : Pueblo Grande

(MNA) : Museum of Northern Arizona

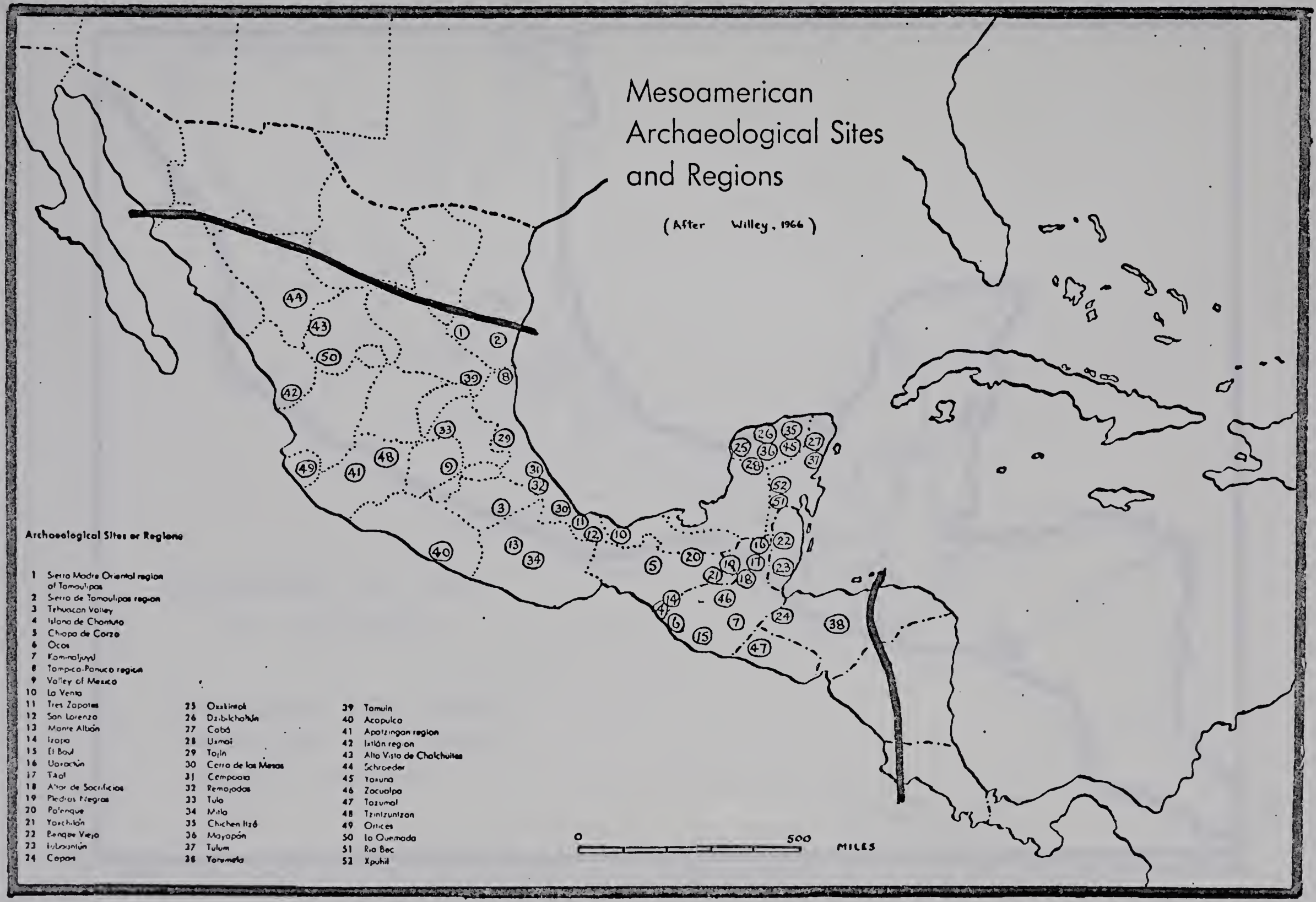
APPENDIX C

MAPS



Map 1. Culture areas and subareas of Mesoamerica, the Southwest and Greater Antilles.





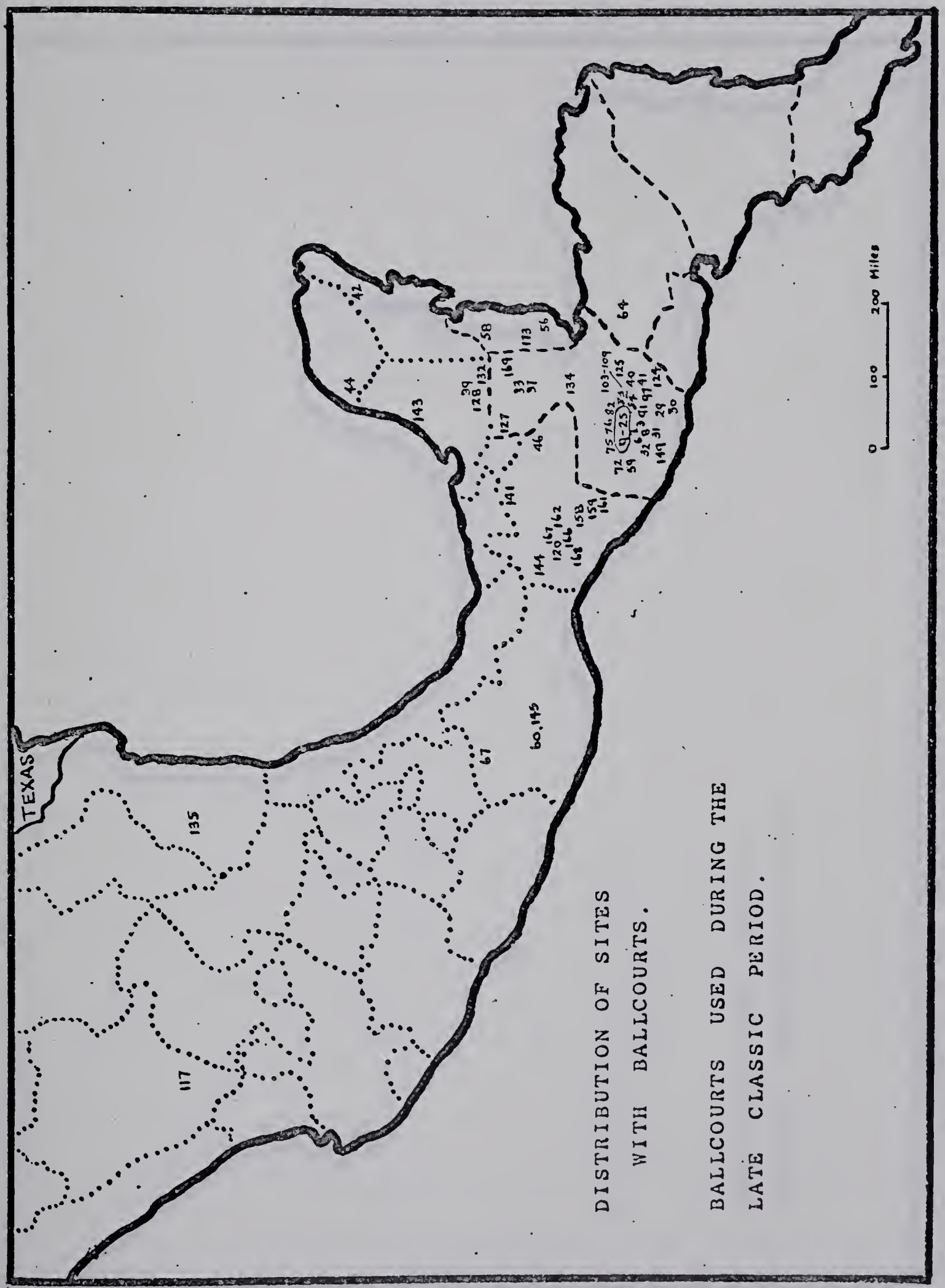
Map II. Mesoamerican Archeological Sites and Regions.





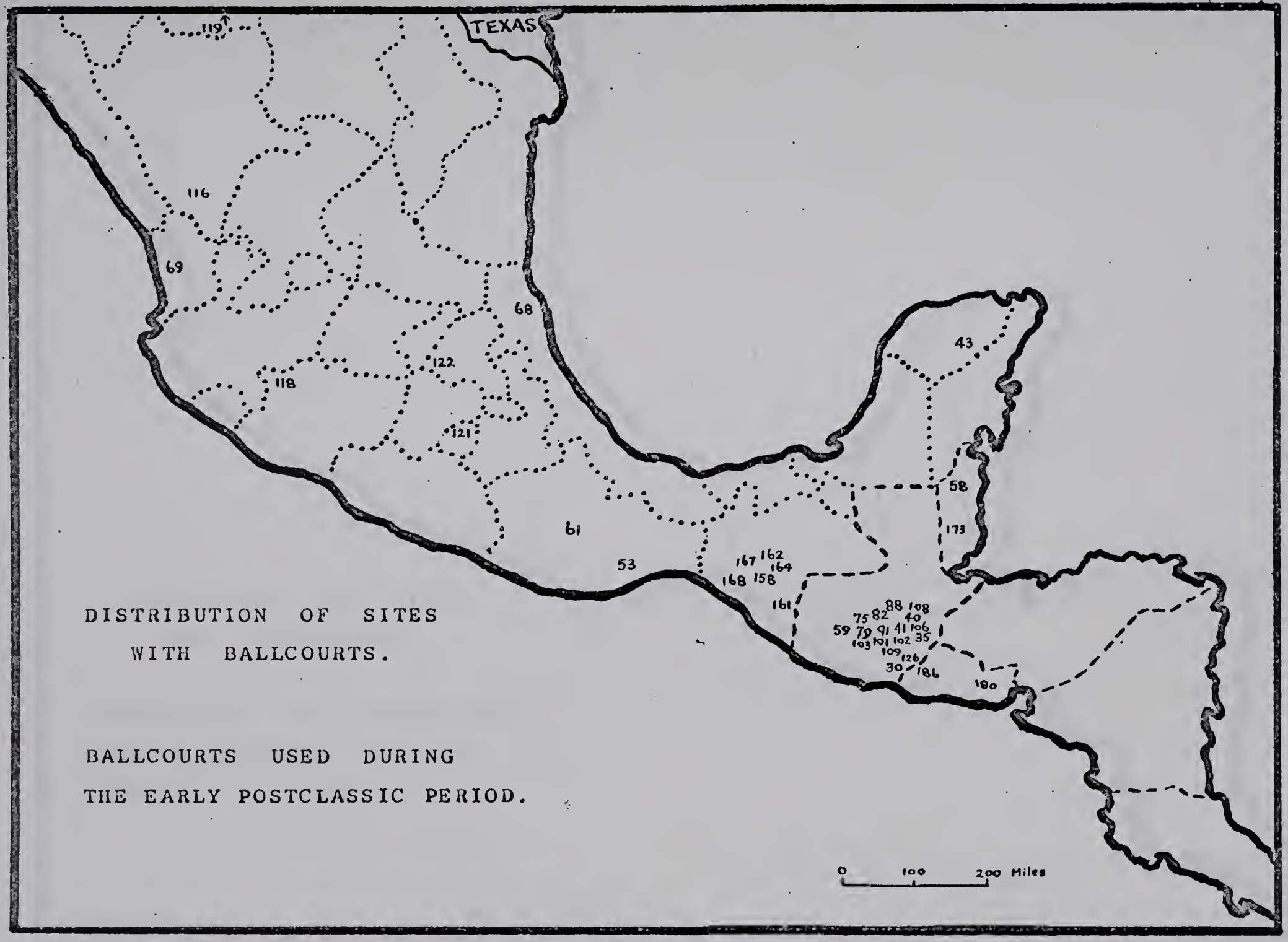
Map III. Mesoamerican Ballcourts used during Preclassic and Early Classic Periods.





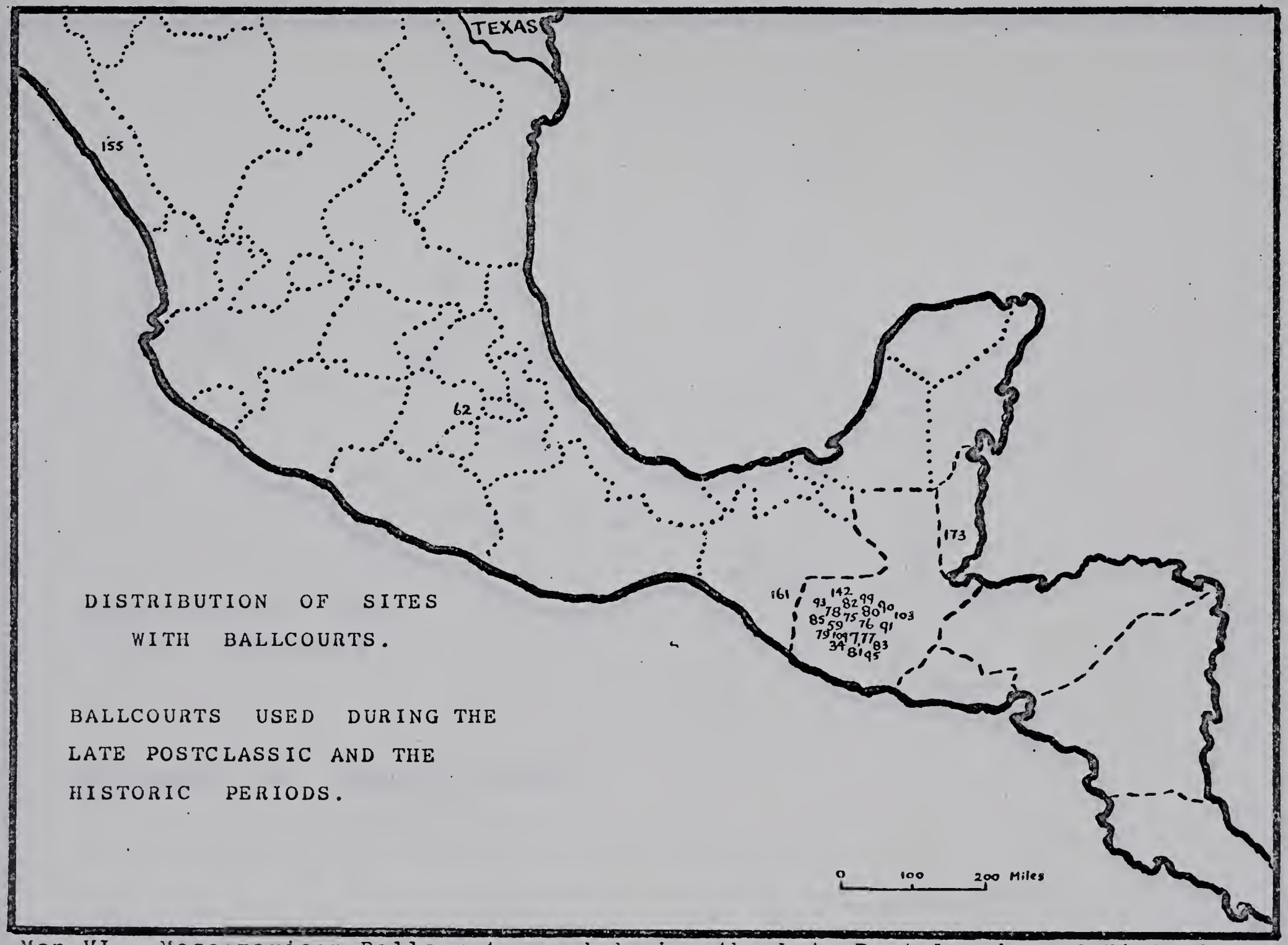
Map IV. Mesoamerican Ballcourts used during the Late Classic Period.





Map V. Mesoamerican Ballcourts used during the Early Postclassic Period.





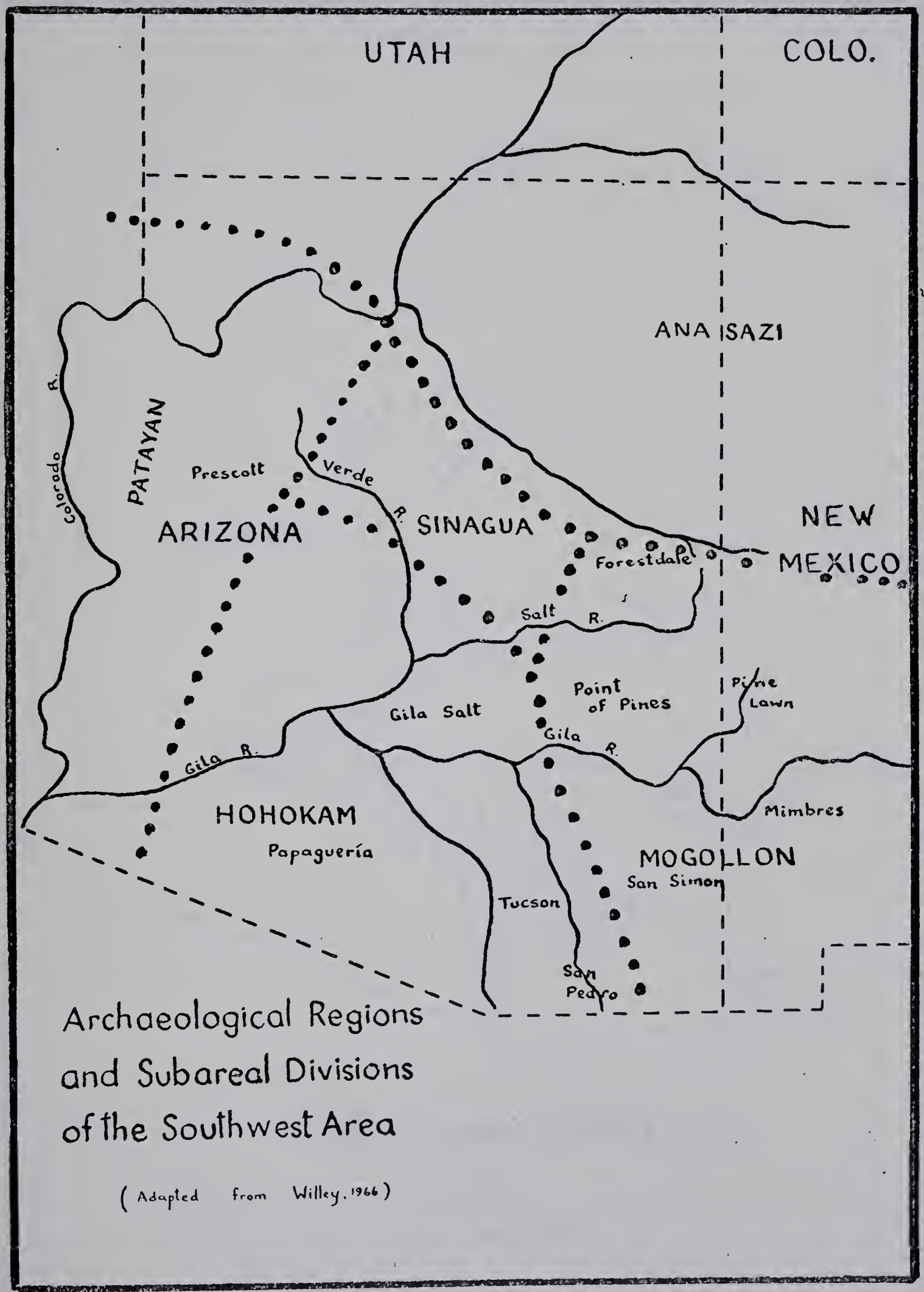
Map VI. Mesoamerican Ballcourts used during the Late Postclassic and Historic Periods.





Map VII. Mesoamerican Ballcourts used during unknown periods.



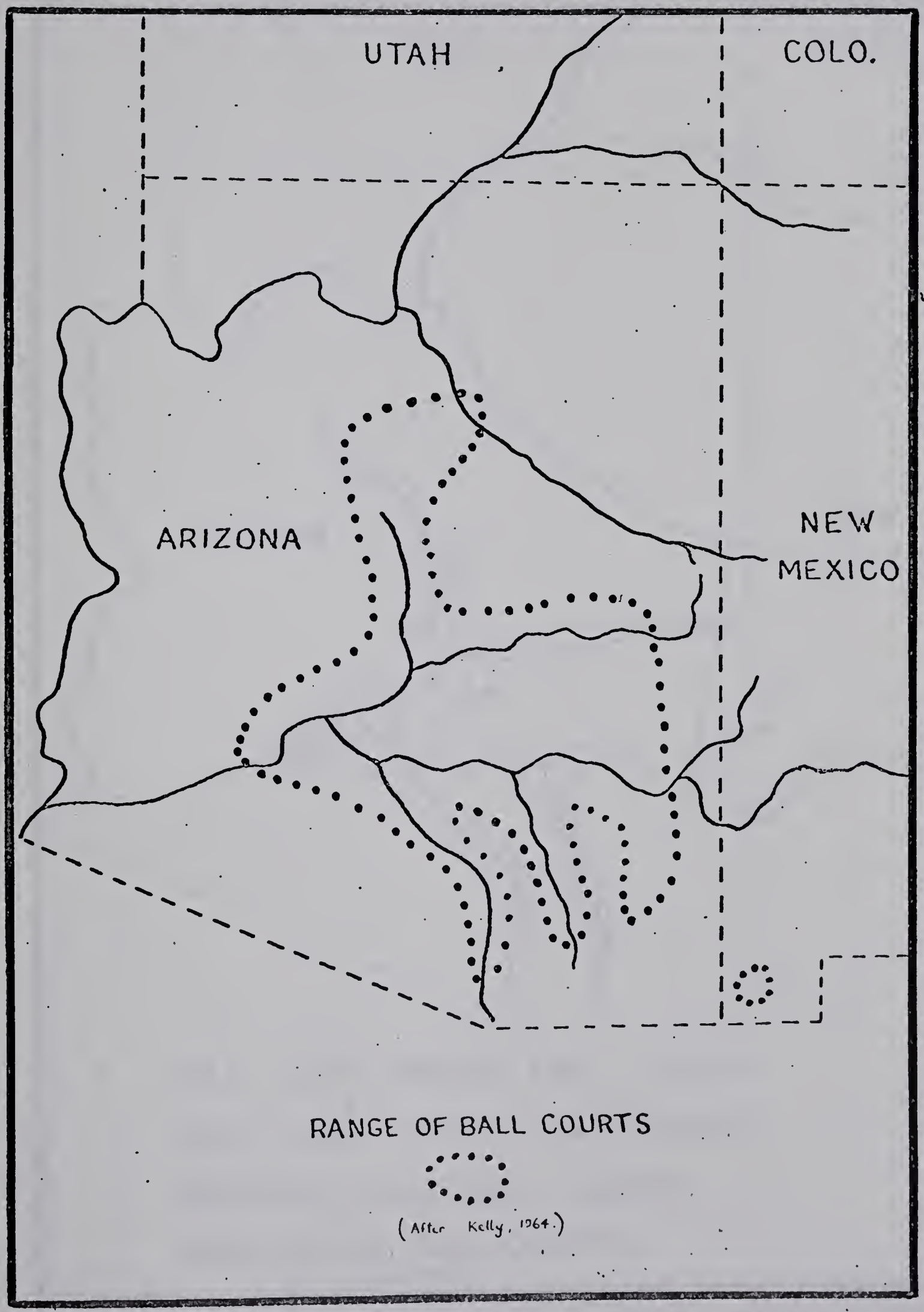


Archaeological Regions and Subareal Divisions of the Southwest Area

(Adapted from Willey, 1966)

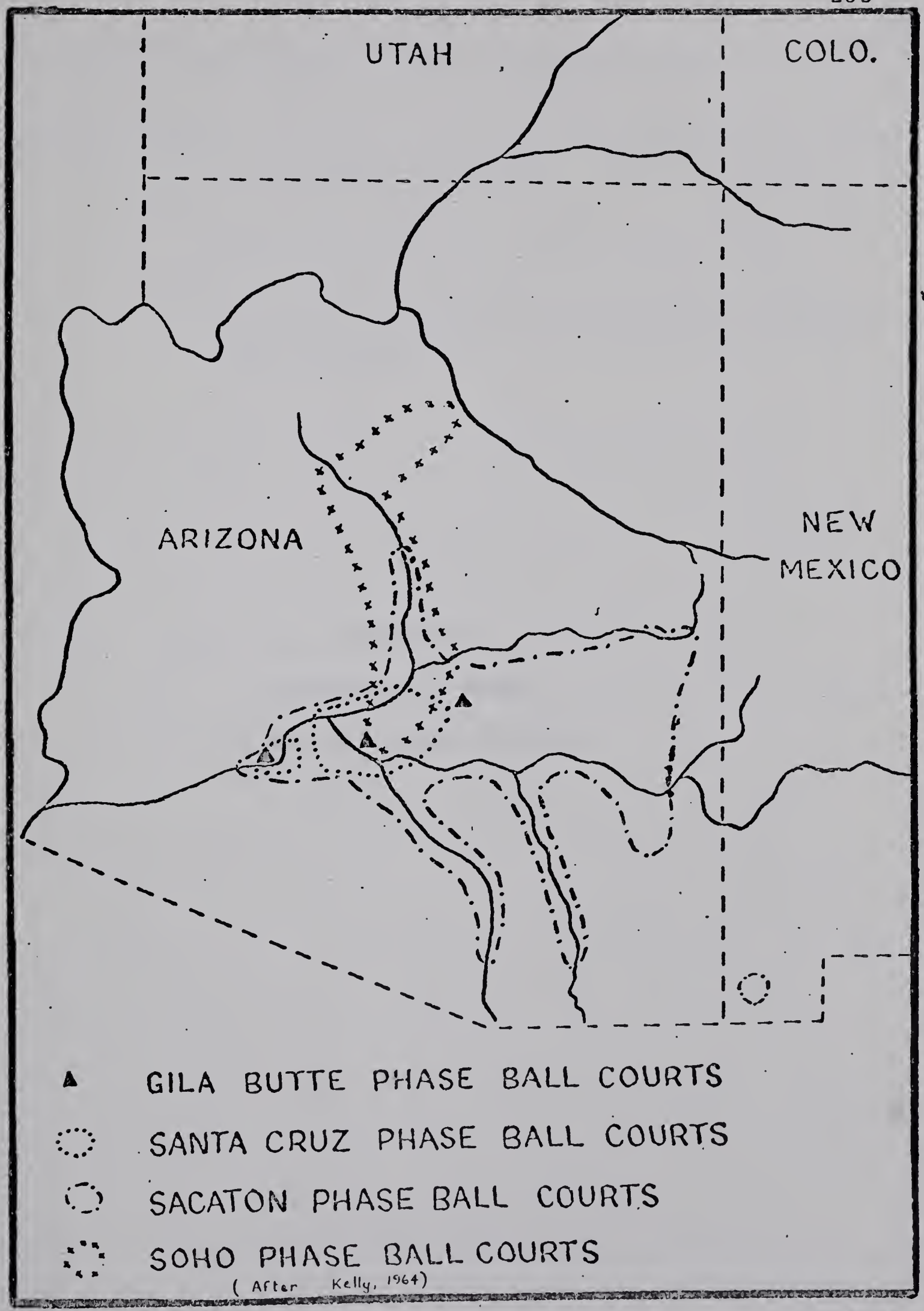
Map VIII. Archeological regions and subareal divisions of the Southwest area.





Map IX. Range of ballcourts in Arizona and New Mexico.





Map X. Distribution of ballcourts throughout culture phases.



APPENDIX D

EUROPEAN BALL GAMES

OF THE SIXTEENTH CENTURY

EUROPEAN BALL GAMES OF THE SIXTEENTH CENTURY

Sources: Encyclopaedia Brittanica, "Lawn Tennis and Tennis," Encyclopaedia Brittanica, 14th Ed. (Anon.)

A. E. Crawley, "Pallone, Pelota, and Paume," The Field, Vol. 123, No. XVIII, April, 1914.

Theodore Stern, "The Rubber-Ball Games of the Americas," Monographs of the American Ethnological Society, XVII, J.J.Augustin, New York, 1950, pp. 47-50.

As was mentioned in the text, it is very likely that the early Chroniclers described rubber ball games in Mesoamerica using a framework derived from a knowledge of games then popular in Europe, namely, jeu de paume (tennis), pelota vasca (modern jai alai), and pallone.

Tennis, a game confined mainly to royal court circles, had spread from France into Spain and other parts of Europe prior to the Conquest of Middle America. It was played on a rectangular court usually measuring about 100 feet by 30 feet. The court was completely enclosed by end and side walls. Galleries were situated around the wall area. A transverse net divided the court equally into service and hazard areas. Within the end gallery of the service side was a long opening called the dedans. In the right hand corner (as seen from the service court) of the gallery on the hazard side, was an opening called the grille. These two openings, together with openings in the ends of the side galleries, constituted the winning holes.

A buttress, termed the tambour, projected onto the court near the grille. The main court markings consisted of a line limiting the upper boundary of the walls, hazard and service lines which enclosed the service area of the court, and chase lines, drawn at equal intervals parallel to the end walls.

Play required the serving of the hard, leather covered ball with the palm of the hand or with a racquet against the side wall, to drop into the hazard court. A fair return involved recovering the ball on the full or on the first bounce to send it over the net into the opponent's court, either directly or via the opponent's playing walls. A player lost a stroke if he hit the ball twice or allowed the ball to touch his person. He won a stroke by hitting the ball into one of the winning openings on the other side, by receiving two consecutive faulty serves, when his opponent failed to return the ball or by winning a chase.

In order to set up a chase, the player let the ball pass him, whereupon the umpire would call out the chase line nearest to which the ball landed on its second bounce. The closer to the back wall, the better was the chase. A stroke into the opponent's galleries or doors (except the winning opening) also counted as a chase. A chase did not count as a score, but had to be played off. Several accumulated chases might be resolved in sequence. The chase was won

by driving the ball into a winning opening; or by making a better chase, that is, one closer to the end wall, than had the opponent.

A match comprised the best of three of three or five sets. Each set consisted of six or eight games. The scoring procedure was identical to that of modern tennis. Both singles and doubles matches were played. Betting on games was customary; and in the circles in which the game was played, often for very high stakes. The game was popular with both the laity and clergy who lived a courtly life. Tennis represented a prevailing secular, recreational aspect of sixteenth to eighteenth century European high society.

Pelota Vasca, which developed as the modern Basque game of jai alai, has several variations depending on the form of the court and the implement (hand, glove, paddle or chistera) used to strike the ball. The court is known today as the fronton, a name fromerly applied in Spain to the end wall. Basically, there are two walls, an end-wall (frontis) and a side wall (ble). A back wall (rebote) may also be added, as well as a fourth wall; but these are optional. Upon the ble, vertical lines are drawn at intervals of four meters (cuadros), starting from the frontis. There may be between fifteen and twenty such cuadros, which correspond to the chase lines of tennis. Transversely

across the floor (cancha), two lines run from the fourth and seventh cuadros. These serve the same general purpose as do the service and hazard lines on the tennis court. Escases or boundary lines run along close to the top of the walls and upon the open sides of the court.

The object of the game is similar to that of tennis, although the very nature of the court necessitates some differences in play. Basically, play is by rebound from the walls, in particular the frontis, and the ball must be struck on the first bounce. Faults include among others, body fouls and hitting the ball out of court. The nineteenth century development of the chistera, a long curved basket, worn on the hand, has led to changes in play.

Pallone originated in Italy in Roman times. This game entered France by the thirteenth century, and is reported in Spain by the sixteenth century. There were several versions of this game. It was sometimes played in an open field, in a courtyard or room, or even in a street. A transverse line divided the court into two halves. Chase lines were also drawn. When played in an enclosed space, play involved rebounding the ball from the side wall. The ball, which was made up of a leather outer case and an inflated bladder, could be struck with a wooden club or a padded gauntlet; or it might be kicked. Drives of up to one hundred yards are reported. This game was much slower

than tennis; but in contrast to the more individual nature of the game of tennis, pallone was a team ball game.

These games constituted the referents which the early Spanish chroniclers could draw upon to describe the games of Mesoamerica and the Greater Antilles. Those who had frequented court circles probably drew many comparisons between the New World games and tennis. Others might have used pelota or pallone as a basis for comparison and terminology.

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